JPRS 74181

14 September 1979

Worldwide Report

ENVIRONMENTAL QUALITY

No. 224

FBIS FOREIGN BROADCAST INFORMATION SERVICE

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Correspondence pertaining to matters other than procurement may be addressed to Joint Publications Research Service, 1000 North Glebe Road, Arlington, Virginia 22201.

50272-101

REPORT DOCUMENTATION PAGE	1. REPORT NO. JPRS 74181	2.	3. Recipient's Accession No
4. Title and Subtitle WORLDWIDE REPORT: ENVIRONMENTAL QUALITY, No. 224			5. Report Date 14 September 1979
			6.
7. Author(s)			8. Performing Organization Rept. No.
9. Performing Organization Name and Address Joint Publications Research Service 1000 North Glebe Road Arlington, Virginia 22201			10. Project/Task/Work Unit No.
			11. Contract(C) or Grant(G) No. (C) (G)
12. Sponsoring Organization Name and Address As above			13. Type of Report & Period Covered
			14.

15. Supplementary Notes

16. Abstract (Limit: 200 words)

This serial report contains worldwide press and radio coverage of environmental pollution and its effects; and pollution control technology, organizations, and programs.

17. Document Analysis a. Descriptors

Worldwide
Pollution
Environmental Control
Meteorology
Ecology

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group 4, 6, 18G, 18H

18. Availability Statement	19. Security Class (This Report)	21. No. of Pages
Unlimited Availability Sold by NTIS Springfield, Virginia 22161	UNCLASSIFIED	66
	20. Security Class (This Page) UNCLASSIFIED	22. Price

(See ANSI-Z39.18)

OPTIONAL FORM 272 (4-77)
(Formerly NTIS-35)
Department of Commerce

JPRS 74181

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WORLDWIDE REPORT

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FRENCH DEFENSE MINISTRY REFUSES TO COMMENT ON NUCLEAR TEST

Hong Kong AFP in English 0938 GMT 8 Aug 79 OW

[Text] Paris, Aug 8 (AFP)--The French Defense Ministry today refused to confirm or deny that France triggered a powerful nuclear test blast under the South Pacific Ocean on July 25 and that it caused a small tidal wave.

New Zealand's national seismological observatory announced last night that it detected a blast equivalent to an earthquake with a force of 6.3 on the Richter scale--the most powerful French test explosion in four years. Seismologists estimated the power of the detonation to be about half a megation (equivalent to half a million tons of TNT).

A tidal wave injured two people that day on Mururoa Atoll 4,800 kilometres (2,900 miles) northeast of New Zealand where French underground test blasts are carried out. The French Atomic Energy Commission commented at the time that tidal waves were a frequent natural phenomenon in that area.

A Defense Ministry spokesman today recalled that the Ministry "customarily refrains from any commentary on reports about French nuclear tests in the Pacific, either to confirm or deny them." He delined to comment on the tidal wave for the same reason.

New Zealand's major afternoon newspaper, THE AUCKLAND STAR, criticized acting Prime Minister Brian Talboys today for failing to make a specific protest over the July 25 test. THE STAR editorialized: "We certainly do not want the Pacific neighbourhood racked with more aritficial earth tremors and who-knows-what enviromental damage," It suggested that New Zealand support Pacific Ocean enviromental groups in demanding that France test atom bombs on its own soil. The Greenpeace Foundation of New Zealand sent a letter to French President Valery Giscard d'Estaing protesting against continued nuclear blasts.

CSO: 5000

BRIEFS

FRENCH NUCLEAR TEST CONDEMNED--Auckland, Aug 8 (AFP)--A newspaper today condemned France's latest underground nuclear test in French Polynesia and called on New Zealand to take a tougher line. "We were lucky to get through the atmospheric testing without serious aerial pollution," said this country's major afternoon daily AUCKLAND STAR in an editorial. "We certainly do not want the Pacific neighbourhood racked with more artificial earth tremors and who-knows-what environmental damage. Let the French be told. New Zealand should speak up." The paper criticized Acting Prime Minister Brian Talboys for deciding not to make a specific protest over the test at Mururda Atoll on July 25 monitored by New Zealand scientists as equivalent to an earthquake measuring 6.3 on the richter scale. Perhaps it was time for New Zealand to support a call by local environmental and peace groups for the tests to be shifted to metropolitan France-possibly in the Massif Central Plateau, the STAR added. France switched its atmospheric nuclear tests to underground in French Polynesia in 1975. [Text] [Hong Kong AFP in English 0605 GMT 8 Aug 79 OW]

NEW ZEALAND MINISTER ON FRENCH NUCLEAR TEST--Wellington, Aug 13 (AFP)--New Zealand's radiation laboratory has found no signs of nuclear venting into the atmosphere following France's underground nuclear test at Mururoa Atoll on July 26. Acting Prime Minister Brian Talboys told this to a press conference today. He said the laboratory's stations in Rarotonga Western Samoa, Fiji and Tonga had all reported no signs and the time for any venting to be detected has now passed. Mr Talboys added, "But the government accepts without a doubt that there was a nuclear explosion." The New Zealand Embassy in Paris had made inquiries but the French Government would not confirm or deny an explosion had occurred. The embassy was referred to the French Atomic Energy Commission which said the shock wave from a nuclear test could not have caused a tidal wave of the type which hit the atoll. [Text] [Hong Kong AFP in English 9014 GMT 13 Aug 79 OW]

CSO: 5000

POLLUTION LEVEL IN BRISBANE RIVER REPORTED FALLING

Brisbane THE COURIER-MAIL in English 10 Jul 79 p 3

[By Peter Trundle]

[Text] POLLUTION of the Brisbane River is falling for probably the first time since white settlement introduced it in the 19th Century.

As the Seventies die, the coming alive again of the river is one of the environmental success stories of the decade, with the trend of 100 years reversed.

Pollution from factories, meatworks, ships, pesticides and sewers is down.

It has occurred in the last six years, through the State Government - established Water Quality Council and Port of Brisbane Authority, the Brisbane City Council, and industry.

This is how it was done:

- State legislation which operated from 1973, which greatly reduced pollution from factories and oil spills from ships.
- The big flood of 1974. It flushed out the muck and made the job easier.
- An outlay of $36 million by the Brisbane City Council on upgrading the sewerage treatment works at Luggage Point at the river mouth. The first stage started working in early 1978.
- A $10 million anti-pollution equipment installation by private industry. It once used the river as a sewer.

Cleanest

Mr. Jim Turnbull, chairman of the Water Quality Council, says the river is the cleanest for at least 50 years.

Port of Brisbane Authority traffic manager Captain Tom Tucker agrees with him.

Professor of Zoology at Queensland University, Professor Jim Thomson, says:

"The level of pollution in the river is definitely falling."

Queensland Conservation Council executive member and Griffith University teaching fellow in environmental chemistry, Mr. Greg Miller:

"The pollution situation has improved. But there are still problems, some of them serious."

Mr. Burns Labor M.L.A for Lytton: "The Brisbane River is a lot cleaner. This year is the best for bream for 10 years."

The river will never, of course, return to what it was before European settlement.

Then, there were fewer than 2000 people on or around the river. Now there are a million or more.

When the aborigine was king, the river teemed with fish.

By the late 1800s, the white man was pouring his factory pollution into the water.

Pollution can kill oxygen, and fish need oxygen to live.

Unsafe

As late as 1971-72, the minimum amount of dissolved oxygen in the river was only 1.5 milligrams per litre.

In 1978-79 it had more than doubled to 3.3.

- Below 3.0, the river is unsafe for many species of fish.
- The average rose to 5.8 in 1978-79.
- This was 50 per cent higher than two years' previously.
- The fish are coming back, but some varieties are still rare.
- For the aborigines on the river in the early 1800's, there were plenty of perch and jew, which are now rare.
- Even up to World War II, the perch run was an annual event, with thousands at a time.
- After the war, in 1945, there was a tremendous upsurge of industry and pollution and this ended the perch runs.
- Back in the aborigines' time, there were also mangrove jack, a red fighting fish which looked like a bream; and the okeye herring.
- They were missing for a long time, too, but they are

coming back.

- Many other varieties are returning in much larger numbers.
- Fishermen and others who work on the river or use it for sport say the fish population has exploded.
- Families are throwing in lines again in the city reaches.
- At the mouth, in the bream season just ended, catches of 100 in a night were common.

One amateur fisherman took 133 bream in 15 hours.

They were big fish: 0.4 kg (1 lb) or better compared with an average of half that around Jumpinpin on the coast between North and South Stradbroke Islands.

And the bream is your typical river fish.

The sharks of the sea, which go up river looking for food, are being caught at Jindalee.

That is 48 km (30 miles) upstream from the mouth as the fish swim.

This, say fishing experts would not have happened four or five years' ago.

The same, they say, can be said of the flathead, mullet, jew, and bream found also at Jindalee now.

There are whiting at Indooroopilly.

The dolphin are coming back.

And when they emptied the dry dock at Colmslie recently, there was a school of 27 sharks in it.

A year ago, prawn trawlers began working full time in the city reaches for the first time in five years.

And more and more crabs are being taken from these spots.

Says Mr. Ross Worrall, pollution control supervisor for the Port of Brisbane Authority:

"They're catching just about everything."

A doctor of medicine specialising in public health says the fish can be eaten safely.

But the gut must be removed and the fish cooked.

Eating Brisbane River fish will be even healthier after June.

Next June the Brisbane City Council will start bringing into operation the second stage of its sewage treatment plant at Luggage Point.

An aim is to render harmless to humans the bacteria from human waste which the fish eat.

The first stage of this rubbish-removing plant began working in February last year.

It is estimated to have reduced by 66-2/3 per cent the amount of floatable material once poured into the river.

Factories

The second stage is expected to bring a total reduction of 90 per cent.

Everyone interviewed for this article agreed that visual pollution of the Brisbane River had been decreased tremendously.

(Accidental oil spills do occur — as with waste from factories.

But legislation was tightened last month to try to prevent this.)

The average amount of hydrocarbons found in water samples taken from near the Point fell by more than two-thirds in the year February, 1978, to February, 1979, after the new plant began operating.

Hydrocarbons include **kerosene, oil, and grease** from factories.

This year, for the first time in four, sea mullet netted north of the river mouth had no kerosene taint.

So bad was the taint that it had threatened the sea mullet fishing industry off Caloundra and Bribie Island.

The Luggage Point treatment plant has helped reduce other unseen pollutants of the river.

These are potentially poisonous metals which factories have been diverting treated and untreated into the sewer.

They include nickel, zinc, cadmium, lead, mercury, copper, and chromium.

But has the overall position for metals pollution improved?

The Water Quality Council says it has. The Queensland Conservation Council has its doubts, but will not say it has worsened.

Brisbane is not yet a huge industrial city. The pollution from minerals from its factories has never been great compared with a city like Sydney.

But because of the action taken by the Brisbane factories and the City Council, there must be less pollution from the factories.

A considerable amount of metals gets directly into the river by other and most unlikely ways — from motor vehicles, roads, and buildings, including houses.

The water council's figures on the average metal content of the river are not a reliable guide to whether the total metals pollution has lessened.

One reason is that the amount of metals found in samples has been extremely small.

Possibly, also, not enough samples have been taken to give an accurate trend.

The Water Quality Council says the levels of all metals found in fish muscle tissue are well below the safe limit.

Other unseen pollutants are pesticides, such as D.D.T. and dieldrin.

Controls

The Queensland Conservation Council is not happy about the amount of pollution from this source.

The Water Quality Council's figures on pesticides, like D.D.T. and dieldrin, show that between 1972-73

and 1977-78, the maximum concentration in the river fell from 1.69 milligrams per litre to 0.06.

The State Government intends to legislate to control its use.

Education campaigns have helped reduce the use of D.D.T.

OXYGEN LEVELS

MEASURING the oxygen in water is one of the best ways of finding how pollution is affecting the life of the water.

The oxygen from the air is dissolved in the water.

Pollution can reduce the amount of oxygen.

Here are Water Quality Council figures for the average amount of oxygen in the river over the last three years:

The measurements are in milligrams per litre. Below 3.0, the river is unsafe for many species of fish.

1976-77	3.9
1977-78	5.5
1978-79	5.8

Fines total $87,250

THE masters or owners of 30 ships have been successfully prosecuted by the Port of Brisbane Authority under the 1973 Pollution of Waters by Oil Act.

So were 17 companies which had allegedly polluted the Brisbane River from the land.

A total $87,250 in court fines was imposed on the ships' masters and the land-based companies.

The biggest year for fines was 1978, with $33,900.

One ship was fined $20,000.

The shipping or land-based companies have to clean up the oil.

This cost a company $10,700 in 1978.

The port authority is considering prosecuting for alleged spills from ships this year.

The Water Quality Council has not prosecuted any factory owners.

Council chairman Mr. Jim Turnbull says the council prefers to negotiate.

Instead of industry spending money on court cases, the council prefers they spend it on preventing pollution.

But Mr. Turnbull does not rule out the possibility of an early prosecution.

Under the Clean Waters Act, the Water Quality Council has the power to order factories to:

Treat their polluting waste to a "satisfactory" standard before putting it into the river.

Treat it before directing it into the sewerage system.

Put it into the sewerage system untreated.

The council licenses the factories so that it can control or prevent the discharge of anything likely to pollute the water.

Anyone discharging pollution into the river risks a fine of $10,000 for the first offence plus $1000 for each day the offence continues.

Each of the penalties is doubled for the second offence: A $20,000 fine and $2000 a day.

The offender may be jailed for 12 months for the second offence instead of being fined.

Or the punishment may be the 12 months and the fine or fines.

Under the Pollution of Waters by Oil Act, it is an offence to discharge oil into any waters from a ship and from the land, or while transferring oil to or from a ship.

The penalty is a fine of up to $20,000 in each case.

The Act provides for the "removal" of a ship, if necessary to a place specified by the Minister.

CSO: 5000

SCIENTIST DEPLORES WORSENING SMOG IN BRISBANE

Brisbane THE COURIER-MAIL in English 12 Jul 79 p 3

[By Peter Trundle]

[Text] SMOG in Brisbane is bad now — and is getting worse.

This is the finding of Dr. Andris Auliciems, senior lecturer with the Geography Department at Queensland University.

Dr. Auliciems' statements are in a paper on air pollution in Brisbane.

It is published by his department.

He lectures in environmental studies and climatology.

Dr. Auliciems came to Brisbane about six years ago and was impressed with the "sparkling quality of the blue skies."

Analysing

Not only had this progressively diminished to his eye.

"This is also objective evidence to suggest that this apparent deterioration is not merely the result of habituation of the senses."

Dr. Auliciems comes to his conclusions after studying and analysing data from the Air Pollution Council and other investigations in the city and suburbs.

"All pollution data for the city shows trends of increasing concentrations of these very substances that have destroyed the attractiveness of major population centres elsewhere," he says.

Initially, they had climates as good as Brisbane's.

Indeed, present figures indicate that (smog) in unacceptably high concentrations is rapidly becoming (habitually prevalent) over Brisbane also.

Regrettable

"These regrettable developments should come as no surprise.

"The society at large has not been inclined to respond purposefully to warnings of impending environmental problems.

"This is despite the experiences and publicity from overseas, and even from other cities within Australia.

"Nor, up to the present, have Britain politicians and government officials displayed stances beyond those necessary for the maintenance of a decorum of concern."

Dr. Auliciems is gloomy, but says it is not too late.

"At this stage, there still exists the possibility for meaningful Government action without the embarrassment of losing political favour with the electorate.

"To the contrary, there is every chance that such action may be turned to advantage with increased public enlightenment.

"It would be more than a pity to miss perhaps the final remaining opportunity.

Resources

"Queensland is one of the few remaining places in the world with sufficient resources to permit both rational development and high environmental quality.

"The choice appears to be one of making a relatively minor investment now for a large financial and social gain in the near future.

"Or permitting Brisbane to degenerate gradually into just another stagnated Los Angeles or Sydney."

Dr. Auliciems says the concentration of ozone (smog) in Brisbane has already reached serious levels.

Figures from Sperling Street, Rocklea; Curtin Avenue, Hamilton, and Brunswick Street, Fortitude Valley "now exceed (World Health Organisation) standards."

Brisbane, because of its location and topography, had a climate which could lead to the worst pollution of probably any capital city in Australia.

Its sunny, calm climate, with low wind speeds, helped make the city a classic site for the maximum accumulation of airborne pollutants.

Observations indicated that pollution levels were highest in the south, south-east, and north-east of the city, and lowest in the north-west.

[The smog is caused by the interaction of sunshine and polluting chemicals.]

Dr. Auliciems says the worst sources of pollution in Brisbane are motor vehicles and industry.

Motor vehicles are the worser of the two.

Estimates of the weight of pollutants being emitted from motor vehicles in Brisbane each day range from as low as 461,300 kilograms to 663,200.

This is even with the reduced emission equipment on the newer vehicles.

Poisonous

The motor vehicle pollutants include carbon monoxide and lead, both of which are potentially poisonous.

He says the monitoring of pollutants by the Air Pollution Council is inadequate.

"But the concentrations of some pollutants such as carbon monoxide and lead, appear to have reached critical levels," he said.

Other sources of pollution include burning rubbish in the open.

Dr. Auliciems found that the few investigations in Brisbane on the effect of air pollution on health were "not reassuring."

Pollution was costly. It caused householders and others increased painting and repair bills.

The pollution was likely to worsen because the increasing shortage of oil supplies would lead to the general use of less expensive and lower grade products with a higher sulphur content.

There was likely to be a gradual transition to more burning of coal for fuel.

One suggestion from Dr. Auliciems is for more people to leave their cars at home and form car pools.

The State Government should make random tests on motor vehicles to see if emission controls are working, he said.

The fine of $2 for tampering with anti-emission devices on motor vehicles should be increased.

Citizen organisations should be represented on the Air Pollution Council.

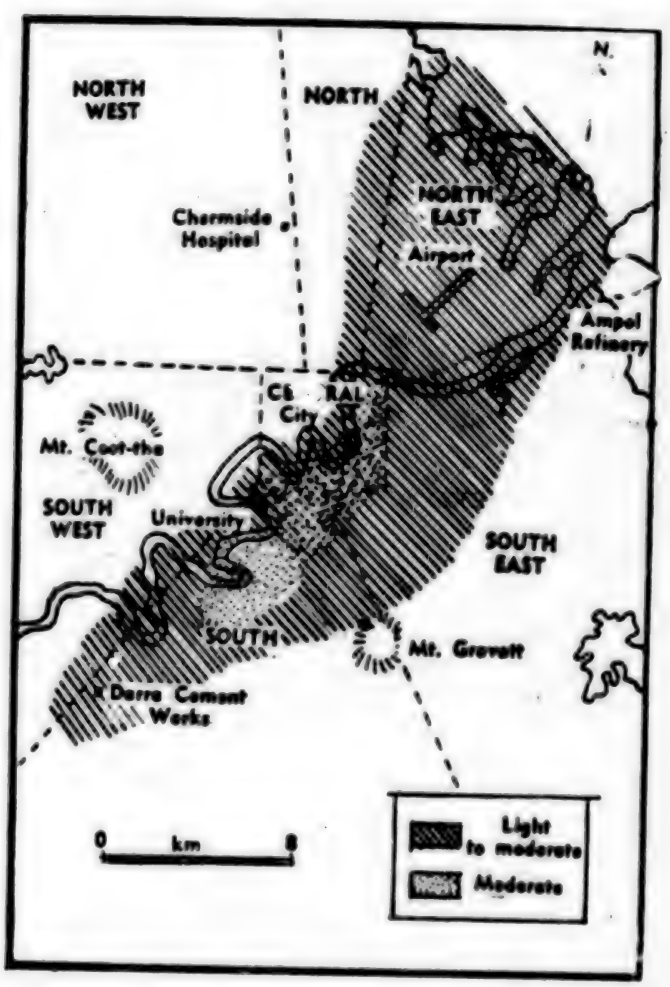
Air quality principles should be incorporated into planning at every level and scale.

All proposals for development (industrial and residential), including the Town Plan, should be revised, he said.

Cost - benefit studies should be made into minimising pollution.

There should be public education into the causes, effects, and prevention of atmospheric pollution.

FOOTNOTE: The State Government's Clean Air Act, designed to reduce air pollution in Queensland, became law in December, 1963.



A "TYPICAL" visual pollution pattern over Brisbane.

CSO: 5000

BRIEFS

SALINITY RESEARCH COMMITTEE--Bunbury: The WA Government expects to set up a specialist salinity research committee within a month. The committee will supervise the integration and application of research into specific salinity problems. The Minister for Works and Water Supplies, Mr MacKinnon, said that the committee would include representatives of government departments, organisations involved in research and farming groups. The composition of the committee of about nine would be determined soon. It was hoped that a conference of world authorities on salinity problems would be hold in WA within about 18 months. WA was leading the world in work on the type of salinity problems faced in the State, he said. The research has been continuing over many years and several government departments and the University of WA were involved. He said: "There is no doubt that the clearing of natural vegetation is the cause of salinity. This is irrespective of what anyone may say to the contrary. "The way to arrest it is to replace that vegetation in some way." Mr Mackinnon said it was a mistake to say that WA salinity was related to salinity problems in other parts of the world. [Excerpt] [Perth THE WEST AUSTRALIAN in English 23 Jul 79 p 9]

EFFECTS OF CYCLONE HAZEL--Carnarvon: Banana production has been seriously affected as a result of Cyclone Hazel which damaged all banana plantings when it passed close to Carnarvon on March 13. The May production of 177 tonnes was half the monthly average and much less than the 627 tonnes produced in May last year. Decreased production is expected in the next few months. Department of Agriculture figures show the drastic influence of cyclones on the otherwise steady production performance of the industry. [Excerpt] [Perth THE WEST AUSTRALIAN in English 24 Jul 79, Supp., p 6]

LEAD POISONING DANGER--Sydney.--The State Health Minister, Mr. Stewart, yesterday supported moves to slash levels of toxic lead being absorbed by Sydney children. He backed moves by the Environment Minister, Mr. Landa, and the energy minister, Mr. Hills, to cut the lead content in NSW petrol. The NSW Health Commission is also discussing an education and advertising campaign aimed at parents to reduce the amount of lead being absorbed by children in in other ways. Mr Stewart said yesterday he was concerned by a recent study published by NSW University which showed that 20 per cent of children at one Sydney primary school had blood lead levels exceeding those set by US authorities. [Excerpt] [Sydney THE SYDNEY MORNING HERALD in English 24 Jul 79 p 5] CSO: 5000

BRIEFS

NEW VEHICLE EMISSION STANDARDS--Tokyo, Aug 12 KYODO--The Environmental Agency will Monday announce new emission levels for gasoline and liquefied petroleum gas (LPG)-fueled vehicles in line with the stricter second round of emission controls to be implemented from 1981. Under the new standards, nitric oxide emissions from small sized cars must be reduced 40 percent from 1979 levels, while medium-sized cars must reduce emissions by 25 percent. The Transport Ministry will Tuesday announce the effective date of the new regulations after revising the safety standards for transport vehicles in line with the new emission controls. The new emission controls will apply to new Japanese-made vehicles models including light vans from January 1981. Cars already in production and new small trucks will have until December 1981 to comply. Other small trucks already in production will have to conform by November 1982. The new controls are particularly aimed at small gasoline fueled vehicles weighing under 1.7 tons, excluding passenger cars, and medium-sized gasoline-driven vehicles such as small trucks weighing between 1.7 and 2.5 tons. The new maximum emission level is 0.84 gram of nitric oxide per one-kilometer run in the case of small cars, or a decrease of 0.56 gram from the present level. In the case of medium-sized cars, the maximum emission is 1.26 gram, down 0.34 gram from the existing level. The new emission controls will apply to small imported cars from April 1983 and to medium sized models from April 1984, the agency said. [Text] [Tokyo KYODO in English 1049 GMT 12 Aug 79 OW]

CSO: 5000

DATA ON AIR, WATER POLLUTION COMPLAINTS

Kuala Lumpur BUSINESS TIMES in English 7 Jul 79 p 4

[Text]

The most number of complaints for water pollution in the last few years was made against the agro-based industries. Between Sept. '6 and May this year, they accounted for 50 per cent of the complaints received by the Ministry of Science, Technology and Environment.

Of these industries those related to palm oil drew the highest number of complaints, (33 per cent) while the rubber came second, (23 per cent).

This is not surprising as the rapidly expanding palm oil industry has been identified by the Division of Environment of the Ministry as the single largest source of pollution.

The pollution load from the 130 mills in production in Malaysia has been estimated at 500,000 lbs (250 metric tons) of Biochemical Oxygen Demand (BOD) per day equivalent to the pollution load from nearly half the population in Peninsular Malaysia. This is expected to double by 1980.

The maiden issue of "Sekitar", a publication on environmental issues, by the Division of Environment of the Ministry, noted that the industrial effluents account for 26 per cent of the complaints on water pollution while the rest — 18 per cent were due to mining.

Meanwhile, for complaints on air pollution for the same period, the palm oil industry only accounted for 6.9 per cent. The wood-based establishments gave rise to the most complaints, accounting for 26.7 per cent.

The rubber industry which gave rise to 23 per cent of the complaints for water pollution only accounted for 11.9 per cent of the air pollution complaints, (third highest).

Complaints on air pollution were also due to: rubbish disposal (6.5 per cent); padi, chemical and metals (6.3 per cent each); fishery (5.1 per cent); quarries and motor vehicles (3.4 per cent each); generators (two per cent); cement (1.4 per cent); coal and carbon (1.1 per cent).

On a state-by-state basis Selangor accounted for the highest number of complaints on air pollution. Selangor with 40.4 per cent of the complaints was at the top followed by Johore, 15.1 per cent and Perak, 12 per cent.

Perlis of all the states in Peninsular Malaysia, recorded the least number of complaints accounting for only 1.6 per cent of the total complaints received during the four years and eight month period.

The editorial in "Sekitar" says that quality of environment affects the productivity of the natural resources, which formed the basis for national development and other economic activities.

CSO: 5000

DANGER OF LEAD POISONING REPORTED NEAR BANGKOK

Bangkok SIAM RAT in Thai 15 Jun 79 p 3

[Article: "Warning the People to be Cautious of Lead Poisoning"]

[Text] Mr Boonyong Lowongwatthana, chief of the environmental science division, department of industrial factories, disclosed that lead poisoning is dangerous to human beings and animals. If this poison is consumed or breathed into the body daily, lead will accumulate in human and animal systems, especially in human bodies since they are likely to absorb more lead through food consumption. Ninety percent of the lead in food normally is excreted as body waste, however, only 50-70 percent of the lead in the atmosphere, such as fumes from an automobile exhaust pipe, can be excreted. The best precautionary method against lead poisoning, therefore, is to avoid consumption of lead-contained foodstuffs and avoid the above atmosphere.

The Chief of the Environmental Techniques Division further disclosed that lead could be found everywhere in the atmosphere, especially in exhaust pipe emissions; it could also be found in the ground, for example, around battery factories and lead smelters. Moreover, it can be found concentrated in vegetation. Some edible vegetables have recently been found to contain some lead, for example, at Bang Khru Sub-district Samutprakan Province, near a lead smelter, some examiners found that edible morning glory, water cress, and basil leaves had a high content of lead and were not safe for consumption.

Mr Boonyong indicated that a person who has had a dose of lead or is allergic to lead would show sudden and chronic symtoms, such as dry-throat, constant thirst, headache, insomnia, weight loss, nausea; and if a high dose of lead is in the blood, the person will experience weakness, convulsions, and even becomes unconscious. The worst case of lead consumption can cost a person his life.

The precautionary method that can be taken is to avoid consuming food or beverages that are suspected of containing lead. Fruit and vegetables must be thoroughly cleaned before consumption. In addition, children must be closely supervised and told not carelessly play with or bite on articles that may have lead content, for example, toothpaste tubes, or pencil lead, etc. Moreover, the people should avoid an atmosphere that is filled with fumes from exhaust pipes, and they should try to breath only fresh air, which will help them digest and excrete lead from their bodies.

9013
CSO: 5000

CHAO PHRAYA POLLUTION PROBLEM DESCRIBED

Bangkok SIAM RAT in Thai 11, 12 Jun 79

/Article by Suraphon Sudara, Research Director, Environmental Research Institute, Chulalongkorn University: "Should We Let the Chao Phraya River Decay?"/

/11 Jun 79 p 3/

/Text/ How can we ever let the Chao Phraya River, a very important waterway nourishing a great number of Thai since time immemorial, decay?

Although our mistakes still prevail, thus making the quality of the water in the Chao Phraya River during the dry season very inferior, especially the part that runs through the Bangkok Metropolitan area where several localities have absolutely no oxygen left in the water which is vital to living things in general. Other areas present grotesque pictures of black color and are offensively odorous. Nevertheless we cannot half our efforts to try /to solve the problem/. Neither can we let the river decay further. We must find ways to urgently solve this problem effectively. Why must we be blind to the situation? We must not surrender ourselves to this problem.

Similar situations have happened in many other countries, especially with rivers in highly developed countries, such as the Thames in England, several rivers in the United States, and several rivers that run through the city of Tokyo in Japan, etc. These rivers all were heavily polluted in the past, but due to corrective methods, they were eventually improved and made fit for marine life to reestablish itself. Today these rivers are no longer polluted and the people are making full use of them again.

Our main problem is whether or not we have realized that the Chao Phraya River in its present condition is like a patient in a coma; it will certainly die if left uncared for. We must therefore urgently provide treatment, and without precise methods of treatment it will never survive. However, an experienced doctor and proper medicine may retrieve its life. We actually have numerous experts and it is certain that these "true experts", if given an opportunity to work with serious and sincere support in the form of personnel, funds and definite procedural policy, can definitely restore the Chao Phraya River to again becoming our main life support as it used to be in the past.

The fact that this river passes through several provinces makes the water quality change according to the type of industry in that area. The emphasis here will address only the part of the river that passes through the Bangkok area. Starting at the northern edge of Bangkok the condition of the water is not the best due to the various types of activities in that area which include industries, agricultural activities and population centers, all contributing to the discharging of wastes into the river and thus causing the inferior water quality. As the river runs deeper into Bangkok its quality gets worse and worse and when it reaches the port of Khlong Teuy the water is no longer fit for marine life because there is no oxygen left in it. At the same time the water has accumulated a great volume of various kinds of chemicals. As the river reaches the Phra Pradaeng area, where there is a concentration of industries, it appears that more chemicals are in the water. The situation gradually improves from there on until it reaches the gulf.

First of all, we must consider the cause of the pollution in the Bangkok area. Broadly speaking, we can conclude that there are two major causes of the problem: First, the industrial plants which make up 30-40 percent of the problem; second, the people and their activities, which are a major cause of the pollution, contributing 60-70 percent. In order for us to solve this problem we must therefore begin with these two causes.

The problem caused by industrial plants, as opposed to that caused by the people, must be considered the starting point for a solution because the wastes generated are at stationary spots and therefore are easier to control. The first solution, therefore, is to consider the problem of the industrial plants, and even though it is not a major problem it contributes a great deal to the pollution. If we can solve this problem, we will then be able to control the pollution with considerable success. Improvements at the industrial plants can be made by imposing stiff restrictions on their discharging of wastes into the river, i.e. not to exceed prescribed standards. In fact, the technology is available to eliminate pollutants from the water before they are discharged into the river by the industries, but such technology is not seriously applied, nor has pollution control been thoroughly enforced. If the pollution control mechanism is improved and sufficient support is given to the concerned offices, for example, in the form of adequate funding and personnel to carry out their work effectively, pollution control should bring effective results. An example can be seen at the Mae Klong River where effluent from the sugar factory had been discharged into the river during the dry season, but serious restrictions to control such wastes have for the past 3-4 years cleared up the water and it is no longer polluted today. Similarly, if pollution control in the Chao Phraya River is seriously and strictly enforced, the problem will be greatly reduced. In addition, in the long term standards should be reevaluated to see if they are still suitable to the actual condition. If improvement is needed, proper action should be promptly taken by considering policies to govern river water in a given area to mandate improvement. Such improvement of the standards to achieve their suitability is necessary and must be done periodically.

Another type of industrial plant that is difficult to control and often causes a great many problems is a group of illegal factories. These are the factories that intentionally avoid registration with the Ministry of Industry. Also included are small-sized factories that are classified as small-sized cottage industries whose machinery horse-power and number of employees are less than the limits set for industrial factories. There are many of these small-sized factories.

These illegal factories operate with great freedom since they are not supervised or controlled, and a great volume of effluent is discharged from these factories. Few laws exist that will control them and those that do are not capable of effectively solving the pollution problem. These factories therefore are another major cause of water pollution.

It is time for us to stop these activities by the large-sized, small-sized or illegal factories as they must learn to take responsibility for society and solve the problem they may have caused it. Factories, regardless of size, must see to it that their wastes are not harmful upon discharge. We must find strict and forceful measures to control these illegal and small-sized factories, by examining their wastes before permitting their disposal into public waters. If no effective measures are in existence, we must promptly design them and this is the most auspicious time to do so. The above suggestion may cause some reactions from those small-sized factories because their economic condition may not permit them to improve their polluted discharge. In this case, it is the right time for them to reassess their locations, i.e. if they decide on the present locations, then they must find enough funds to improve their polluted discharge by means of the appropriate technology in accordance with the set standards. And if they lack the economic means, the government must then establish industrial centers or settlements for these factories to resettle themselves. To eliminate polluted effluent from these factories at their new locations the government must design a central pollution control system within the settlements, charging these factories according to the volume of effluent they discharge. In fact, an example of this type of arrangement has achieved effective results in Kanchanaburi where the Ministry of Industry constructed a central water treatment plant to eliminate polluted effluent for factories that do not have the facility. All factories, regardless of size, should be situated within certain zones in order to facilitate environmental controls and improvements, as well as economic savings.

The factor that contributes more to the pollution in the Chao Phraya River than does industry is residential housing. This problem is very difficult to correct as there has never been a sewage system in the Bangkok area. A well-known foreign engineering consulting firm has been hired to give advice on this matter numerous times and they suggested that we install a very costly sewage system. This advice is difficult for us to follow because of Thailand's present economic situation. But what should we do? Should we just give up and ignore the problem? Definitely, we will not give up as long as we have thoughts, determination and efforts; there is nothing

we cannot overcome if executed with meticulousness. Therefore, this problem must be solved with determination, a solid policy, with firm support and comprehensive planning. With these factors available, the problem definitely will not be beyond the capability of the Thais.

Let us first address the problem of garbage. Although garbage is solid and seems to have no relevance to liquid effluent, the Bangkok population, which is nearly 5 million, generates a great volume of garbage. The refuse officials, who are dependent on budgetary support and their own determination, are at present capable of picking up only 60 percent of the total garbage generated each day. The remainder is scattered about and some certainly collects in drainage pipes, ditches, canals and the river. As a result, it is the main cause of water pollution. Effective improvements and support for refuse collection and its elimination is therefore one of the essential factors in solving the problem of water pollution.

Liquid effluent from households can be further classified into two major categories: toilet discharges and other household discharges.

Due to the fact that Bangkok is situated on low land, a mere one meter above sea level with some parts even lower, the control of toilet waste is not effective. This is because the septic tank is filled up with water as soon as it is laid in the ground, presenting the householder with the problem of frequent overflows. As a result, the overflow spreads rapidly and mixes itself with water in the ground. It is heard every day in Bangkok that Bangkokians today sit on toilet wastes and that is not far from the truth. Realizing that their toilet system is ineffective, a great number of people solve the problem by discharging their wastes directly into the public waters via pipes. As a result, these extremely careless activities greatly aggravate the problem of water pollution and the spreading of contagious diseases. Such activities must be promptly investigated and corrected. One of the solutions for eliminating toilet wastes, which is extremely improtant, therefore, is to search for suitable technologies that are effective and appropriate for the situation. There have been attempts to bring in foreign technology to eliminate toilet wastes, and while the technology is effective, the expenses are prohibitive, therefore, they are not economically suitable for every household.

It is therefore necessary that our technicians be fully supported in their research and exploration for a system that will be suitable, economical and effective. If the research to eliminate toilet wastes is fully and seriously supported, it is certain that our Thai technicians will come up with a suitable method.

/12 Jun 79 p 3/

/Text/ As mentioned earlier because Bangkok has a population of nearly 5 million, every toilet system that is being used presents a big problem. In large-scale development of housing there is the construction of large communities or improvement of old communities in the form of planned houses or townhouses.

There should be an urgent plan to encourage these communities to install treatment systems for discharge, especially those from toilets. In actuality, if a community is a true planned system, it must have its own water treatment system. However, the majority of these home building contractors usually request a permit to build only a few homes each time so as to avoid construction of a true planned community which normally requires a water treatment system. However, several permits result in tens of thousands of new homes built without a sewage system.

It is a fact that a sewage system for all homes means high expenses to contractors, and, as a result, they try every way to avoid such responsibility. It will be desirable if technicians are financially supported by the state or private sector to carry out research to find suitable technologies.

If the cost-effective technology for the construction of a sewage system at each house or a group of 3-4 houses is found, home building contractors should apply such technology in the building of planned communities and subsequently add construction expenses to the cost of the houses which would not be too high. The measures that will interest these contractors in solving the problem of waste fluids must be pushed by the state, for it must eliminate loopholes in the laws that allow such irresponsibility by the contractors. If forced by the laws, these home builders will have the incentive to find such suitable technology themselves. The elimination of waste fluids at planned communities or townhouses is primarily emphasized here because these are new settlements and therefore are in a better position to solve the pollution problem. On the other hand, they currently are in a position to expand the problem also. For example, the construction of this type of community in suburban areas can cause the areas to deteriorate. The planned communities, therefore, must design measures that will circumscribe the pollution problem.

As mentioned earlier waste fluids from toilets and household activities, such as cooking, bathing and washing, etc., contribute significantly to water pollution. Every home must discharge its waste water, and this must be corrected. However, our economic situation is such that it does not permit us to invest in the installation of pipes to treat waste prior to discharge, as advised by foreign engineering advisers.

Therefore, we must make use of our existing means, that is, our old drainage system of draining waste waters into canals. However, at present, we drain these waste fluids directly from the canals into the Chao Phraya River and thus increase pollution in the river. It would be much better if we could use this existing method, without installing new drainage pipes, but by applying suitable technology to treat the water condition before discharging it into the Chao Phraya River. But what are these suitable technolgies? No one has yet found an answer to this question as there has never been an example anywhere that we can study directly. However, if the research is seriously carried out by our technicians, we should

certainly be able to come up with some cost-effective technology that will lessen the offensive odors to residents living along the river, and that will not destroy the appearnace of the canals which have long been symbolic of Bangkok. Nevertheless, all these technologies can only be achieved through serious government support. Isn't it time we started the operation?

Another important factor I would like to address that accelerates water pollution is the extensive use of soap powder by our people. A similar situation occurred in England which caused pollution in the Thames decades ago. The soap powder that is available today contains a great amount of phosphates, and we tend to use it more than necessary, thus polluting our waters with it. Phosphates are also important elements of plant fertilizers, therefore, upon being discharged into the river they will accelerate plant growth under water. As a result, algae and other algal vegetation are abundant and fast-growing, causing the water color to become greener. As this vegetation abounds, it causes pollution in the water, leaving no oxygen in it, and as a result, the water becomes polluted and black. This is a problem that is currently facing us.

Furthermore, all kinds of soap powder now available contain synthetic chemicals which, once produced, are not biodegradable.

These chemicals present several ecological problems, such as resisting the dissolution of oxygen from the atmosphere in the water, and therefore are a major cause of pollution. Several developed countries have banned production of soap powder which contains these non-biodegradable elements, whereas in some countries there are campaigns to boycott soap powder altogether and encourage the use of the old-style soap instead. No one in our country has considered this matter seriously. Initially, at least, if consumers agree to use less soap powder and use it only when necessary, the water pollution problem will be somewhat reduced. At the same time, producers and consumers should begin to think of ways to improve the soap powder in order to solve this long-term problem.

Another important cause of pollution that is often overlooked is the garbage. At present, the Bangkok Metropolis does not have the capability to collect garbage all in various places every day. Therefore, a great volume of garbage is uncollected. When this refuse later collects in the waters, such as canals and even rivers, it becomes a major cause of water pollution since it needs a lot of oxygen over a long period of time to disintegrate. Therefore, this matter cannot be overlooked once we begin the operation to improve the situation.

Actually, solving the pollution problem of the Chao Phraya River is no easy task. However, it is nothing that is beyond our capability. The important thing is that we cannot let the Chao Phraya River remain polluted, and therefore we must altogether find ways to improve /the situation/. We must begin with each individual and each household in reducing the problem by advising them to re-use household fluids to water and fertilize trees. This will reduce the quantity of pollutants to be discharged into the river. We must advise them to eliminate toilet wastes properly, i.e. do not throw garbage into the river; reduce the use of soap powder or use soap instead. etc.

However, the most important thing is that the state must have a definite policy to determinedly solved this problem. It must correct deficiencies in the laws which permit this problem to occur; it must promptly correct matters that can be immediately applied, and promote research and studies by technicians in search of suitable technologies as mentioned above.

The support from the state must be purposeful, both in the form of funds, personnel and other aids.

Other countries can solve this problem. We Thais are no more ignorant then others so why can't we do it also? Shall we get on with it, Sirs?

9013
CSO: 5000

USSR NUCLEAR ENERGY EXPERT ON SAFETY OF POWER STATIONS

Sofia RABOTNICHESKO DELO in Bulgarian 18 Jul 79 p 6 AU

[Interview by APN correspondent Yuriy Sinyakov, specially for RABOTNICHESKO DELO, with Aleksandr Panasenkov, deputy head of the USSR Department on the Peaceful Uses of Atomic Energy--exact place and date of interview not given]

[Text] In connection with the intensified construction of nuclear power stations, the problems of safety from radiation and the question of environmental protection has not only caused considerable interest in the West, but has also given rise to concern. We publish the following interview by APN correspondent Yuriy Sinyakov with Aleksandr Panasenkov, deputy head of the Department on the Peaceful Uses of Atomic Energy in which he discusses the safety of nuclear power stations in the countries of the socialist community.

Question: The long-term exploitation of nuclear power stations in CEMA member--countries has proved the reliability of the radiation safety systems. Is this conclusion correct?

Answer: A uniform type of nuclear power station has been adopted within CEMA member-countries. This type of power station has a nulcear reactor of 440,000 kilowatt hours. It was tested for the first time in the Novovoronezh nuclear power station, which became the so-called "ancestor" of the large family of nuclear power stations in the socialist community's member-countries. Over 4,000 experts from 80 states were acquainted with the work of this power station and they have all fully excluded the danger of nuclear power stations having a negative influence on the environment. The strictest health protection rules have been introduced in the operation of nuclear power stations in CEMA member-countries and measures have been taken for absolute safety. I would like to note that in the last 25 years, since the commissioning of the first nuclear power station in the Soviet Union and in the world, there has not been a single radiation-attributed death. The annual permissible amount of radiation in the Novovoronezh power station never exceeds 500-800 millibars, which is considerably less than the amount of radiation a human being is exposed to during one X-ray examination. Each working reactor is equipped with a practically fail-safe, double-checked safety system to prevent accidents. Nevertheless, is an accident possible? Here is what A. Petrosyants, chairman of the USSR State Committee for Utilization of Atomic Energy, has said in this connection: "Of course, a scientist cannot exclude all possibilities. However, the question is about the extent of risks. Recently the U.S. Nuclear Power Coordination Committee calculated the probability of an nuclear catastrophe for 100 working reactors. The result was that such a catastrophe is possible once in a million years."

In this connection I should like to observe that nuclear power stations in CEMA member-countries hardly affect the environment at all. Thorough observations in the vicinity of the Novovoronezh nuclear power station to study the effects upon the soil, the plants, the Don River and the air have shown that radiation has not changed the environment at all and that the safety systems in operation ensure complete protection against radiation. Paradoxical as it might sound, among all the branches of industry nuclear power causes the least damage to the environment, although it was expected to cause the greatest. Nuclear power was "housetrained" from its very early "childhood". It was trained to observe the rules of environmental protection so that this correct attitude became "second nature" to it. The strict rules in nuclear energy's relations with nature and with the environment are valid for the Soviet nuclear power stations and for all power stations built on the territory of CEMA member-countries. We need only to recall the accident that occurred in the U.S. nuclear power station to be reminded of the necessity of observing these rules.

Specialists are convinced that new research is necessary in order to finally exclude all possible errors. In the GDR a scientific-technical coordination committee has been created within the framework of the CEMA Permanent Commission for Peaceful Uses of Atomic Energy, which is unprecedented in the world. I will mention just one research program devoted to environmental protection. It is connected with the protection of the water resources of the Danube since, as you know, the Bulgarian nuclear power station is situated on the banks of the Danube and it is planned to build a whole series of nuclear power stations in the future.

Question: Is the percentage of dangerous accumulations on the river bed dangerous? Are such accumulations to be found in the fibers and organs of water plants and animals?

Answer: To answer this question CEMA organized a special expedition in which specialists from Bulgaria, Romania, the Soviet Union, Hungary and the CSSR participated. It studied the radioactivity of the Danube. A Romanian ship equipped with a complete laboratory of equipment and with experts from all the above countries, on an equal basis, cruised up and down the river for several months. The water was tested in various places and at different levels. The river bed, the plankton, the algae and fish from the river were examined and it was possible to declare the radiation condition of the Danube favorable.

Question: Could you interpret for us a small, but alarming news item that appeared recently in the Soviet newspapers. It described a traffic accident in Canada in which several vehicles were involved. Among them, there were two trucks with containers carrying 14 tons of radioactive uranium. What are the CEMA member-countries doing to prevent such dangerous accidents?

Answer: The case you have just mentioned was the result of the criminal negligence of the "Eldorado nuclear company" to which the freight belonged. This accident might actually have had serious consequences since the opening of sealed containers would have threatened the lives of many people. All those engaged in supplying nuclear power stations with enriched uranium are aware that they are dealing with a highly dangerous fuel. In the Soviet Union, as well as in the other CEMA member-countries very strict rules govern the transportation of fuel for nuclear power stations. This, however, only answers half of the question. Nuclear waste is quite dangerous as well. In order to avoid tragic situations in transporting such materials, exceptional measures are

necessary. In this connection CEMA has worked out and adopted special rules for the transportation of used nuclear fuels. These regulations strictly and unmistakably lay down the method of transporting the dangerous freight in special trains and follow special itineraries from the nuclear power station to the plant where the nuclear waste is to be processed. The "Eldorado nuclear company" has become notorious for other such irresponsible actions. At one time it had disposed of nuclear waste in ordinary garbage heaps, as a result of which the housing areas of Port Hope became contaminated. A considerable part of the radioactive waste does not represent any great danger at all. The processing of this material is quite simple. Its radioactivity is not high and the waste rapidly dissolves under water in special basins. Highly radioactive nuclear waste is quite a different matter. It must be preserved for many years in special, hermetically sealed containers. Experiments to "bury" them in certain geological strata, abandoned salt mines for instance, have already been made. The presence of salt is a reliable guarantee that they will not penetrate underground waters. The most important task in this respect, however, is to build a new type of reactor that does not produce large quantities of radioactive nuclear waste.

In the Soviet Union we are now discussing the idea of building large nuclear power complexes. Several nuclear power stations and enterprises for the processing of nuclear fuel andof nuclear waste can be integrated in these complexes. They will insure a full cycle in using nuclear fuel and will, at the same time, facilitate control over radioactivity. Complete safety and optimal environment protection--this is the first rule for all those whose work has anything to do with nuclear power stations in CEMA member-countries.

CSO: 5000

BRIEFS

RADIOACTIVITY CONTROL INSTRUMENT--A lightweight portable radiometric apparatus designated for radioactivity control, called NR 302 power-input dosimeter, has been developed and manufactured as a prototype by the staff of the Research Institute for Nuclear Technology Apparatuses in Premysleni. The apparatus is suitable for research and development laboratories in the sphere of biology, biochemistry and water economy and health services, but it can also be used for measurements outdoors, for example in the surroundings of nuclear power stations. The production of the new measuring instrument has already started in the Tesla Vrable national enterprise. [Text] [Bratislava PRAVDA in Slovak 1 Aug 79 p 2 AU]

CSO: 5000

MEASURES INSTITUTED TO CONTROL INDUSTRIAL WATER POLLUTION

Budapest MAGYARORSZAG in Hungarian No 31, 5 Aug 79 p 24

[Article by Marta Kadar: "Wasted Money; Everyone Pollutes Differently; One Must Understand the Water Too"]

[Text] Every year industry uses 7.5 billion cubic meters of water, and 44 percent of this (3.3 billion cubic meters) is fresh water. This is 10 times the water consumption of Budapest. Every year industrial use of water increases in proportion to production, and it has increased almost eight times in the past 30 years. By 1990, by which time the Paks nuclear power plant and other large installations will be in operation, consumption is expected to increase to 16-17 billion cubic meters.

Industry uses 55 percent of all the fresh water production of the country, 70-75 percent by the turn of the century, so it is obvious that increased thrift is necessary.

Closed Cycle

In industrially developed countries about 10 percent of all technological water needs come from fresh water; the rest is purified and used again.

In Hungary 44 percent of all water needs require fresh water. The goal is to decrease the use of fresh water, keeping in mind the need for economy. In this case economicalness means, for example, that plants built along the Danube should not be forced to reuse water after purification unless this is more economical than using fresh water. This is even the situation at the Danube Iron Works where reuse does not prescribe such strict purification as would be required by water quality protection in the case of sewage to be released.

Industrial production doubles every 12 years and the water needs of industry increase proportionately. At present the factories take care of their increasing water needs primarily with fresh water, with so-called direct water use.

The consequences of this are a shortage of water reserves and increased pollution. The more advantageous water management would reuse the water already used as many times as possible, until the water leaks out or evaporates. In accordance with closed technology the fresh water enters the factory water cycle and polluted water never leaves the factory. This is complete recycling, which could be realized in every branch of industry although it is not yet economical everywhere.

The degree of water recycling depends on the shortage of water and on water use technology. In the textile industry, where recycling accounts for 50 percent of water use, it is possible and profitable to increase the degree of recycling; in the thermal power plants where this ratio is 98 percent it is not. In general it would be possible to achieve a saving of 30-50 percent in domestic enterprises if water use were limited to something like the ideal degree.

The Economic Policy Committee of the MSZMP has set a goal for the water management branch to reduce the present annual increase of 6-7 percent in water needs to 3-3.5 percent in the decades ahead. The development of water management must get ahead of the needs lest a water shortage becomes a brake on social and economic development.

In the interest of achieving, over the long run, the goal which has been set it will be necessary for the significant water use and water polluting branches, primarily industry, to increasingly encourage thrift and protection of water purity in water management activity by making more effective the branch guidance and water affairs authority supervision of water management activities by industrial plants.

In the interest of this goal the Council of Ministers recently passed a resolution concerning regulation of water management activities by industrial plants.

Water pollution increases together with water use. Industrial plants originate 70-75 percent of the harmful pollutants being released. The quality of water reserves is deteriorating while the water quality needs of industrial technologies are increasing.

Carrot Versus Pecs

Severe penalties are imposed on those who pollute water. Sometimes a larger fine must be paid for a smaller degree of pollution, depending on the water quality of the area, the extent to which the water is polluted and the extent to which the waste water harms the water users. The degree of damage, and the consequences, are different even on different sections of the same river.

The Fuzfo Nitrochemical Plant pays a severe penalty for the waste water released into the Sed while Chinoin does not pay for the substantially more polluted water released into the Danube. The Fuzfo plant endangers the drinking water of Pecs with a pollution harmful to health which cannot be demonstrated. For this reason the Public Health and Epidemiology Station has on a number of occasions stopped the taking of water from the Pecs-Mohacs section of the Danube until the polluted water has flowed beyond the water intake section.

The Hajdusag Industrial Works manufactures important and modern articles for public use. But there are various heavy metal salts in its waste water which are poisonous even in small concentrations. Every day the factory releases several quintals of heavy metal salts into internal water channels and thence into the Tisza.

Their fines come to 5-6 million forints per year. Of course, this does not make the water less polluted. Construction of water purification equipment would cost 220 million forints; the National Water Affairs Office would provide 30 percent of this and 30 percent could be obtained from the environmental protection fund but maintenance and operation would cost the enterprise 30 million per year. The enterprise is sensitive to the seriousness of the damage caused and wants to do something. But as long as the fines are a good bit cheaper than purification one can hardly expect any radical change.

The new penalty system, recently introduced in accordance with the prescriptions of a Council of Ministers resolution, places people's economy interests primarily in the foreground and makes evasion impossible. It prescribes various sizes of fines; in those places where the protection of water quality is stressed they can impose fines ten times larger than elsewhere. It encourages an easing of water pollution, the construction of water purifiers, etc.

Industrial water use must be considered in the course of investment and during the preparation of decisions within the framework of a factory water management system survey. The economicalness of water use cannot be the only consideration. The task is not to obtain, store and purify water cheaply but rather to reduce to a minimum the water costs per unit of industrial production. Sometimes millions can be saved by minor changes in manufacturing technology. Up to now, for example, they did not consider the water thrift of a manufacturing technology in the course of investment. A so-called fresh water allotment is provided at the time any factory is established. Even prior to this the National Water Affairs Office supervised this and the waste water leaving the factory. Hereafter professional supervision will extend to internal factory water management activity too, making use of the regionally appropriate water affairs authorities.

Billions Are Carried Downstream

Previously the water affairs organs were only rarely able to examine the stages of the investment decision and influence the water management ideas of a new factory or a factory being expanded in accordance with the water management conditions of the area. Intervention was impossible later in the stages of authorizing creation or operation. "It is thus necessary," the resolution states, "to include a complex technical-economic survey of the water management solutions in the system of preparing a decision aimed at the development of industrial plants and to take the results thereof into consideration in investment decisions on the basis of technical water affairs considerations."

At this time billions are still being carried downstream because they are not using the most economical water management methods in investment, development and operation. For this reason the National Water Affairs Office will oblige the industrial plants to prepare a water management development program every 5 years and to modernize their water management systems.

The water needs of the factories can be satisfied only to the extent justified by technology. In many places they do not know how many forints are being wasted by uneconomical water use.

In many places in industry they do not know how to manage water in the economic sense. There are no experts. Industrial water management has been taught in the water engineering school of the university only since September 1978, for 3 hours per week in the last semester. But industry needs experts who can carry out the new hydrotechnology tasks in the factories. (A 200-250 hour further training course for factory hydrotechnologists will start next year.)

Outstanding experts are being trained in the universities in Poland for industrial water management and for the treatment of industrial water and waste water. A research program for modern industrial water management has been worked out in CEMA--as a result of a recent Soviet proposal. Our homeland is one of those co-responsible for this program.

Technology Exchange

In addition to intellectual and personnel factors there is a need for equipment and machines to introduce modern water management. The industrial design background can be created through the cooperation of water affairs offices and industrial design offices. The Ministry of Metallurgy and the Machine Industry and the Ministry of Construction Affairs and Urban Development, in concert with the National Water Affairs Office, is preparing an industrial background development program for the manufacture of water technology and waste water technology equipment.

Both the industrial enterprises and the National Water Affairs Office are interested in research and technical development. The Water Management Institute has been entrusted with development information tasks; it will collect, store and process developmental data.

The resolution of the Council of Ministers concerning regulation of water management by industrial plants emphasizes important basic principles. Modern water management solutions must be implemented, without exception, in new industrial investments and developments. Within 20-25 years industrial technologies must be constantly exchanged. By spreading new factory water management and water production technologies it is expected that by the end of 20-25 years fresh water needs will no longer increase; that is, increased industrial production will be served by the same amount of water as is used today--in a wasteful fashion.

8984
CSO: 5000

CHROME RESIDUALS FOUND IN DRINKING WATER

Buenos Aires LA PRENSA in Spanish 24 Jul 79 p 13

[Text] San Martin (Buenos Aires)--A section of Villa Bonich bounded by Sarmiento, Rodriguez Pena, Alvear and Jose Hernandez streets has the serious problem of contamination of the underground waters with chrome residuals.

This was confirmed by the chemical analyses performed by municipal agencies, and by those previously made by the toxicology laboratory of the Ricardo Gutierrez Children's Hospital and the analytical laboratory of the Navy, to whom the inhabitants of the section resorted in view of the physical disorders afflicting them.

In the face of the uncovered problem, the municipality decided as a preventive measure to close down an electroplating shop located in the area and a similar department in the Necchi sewing machine factory, judging them to be sources of contamination by dumping residuals of materials used in chromium plating in septic tanks, and it also turned the matter over to its legal agencies for appropriate judicial action.

The contamination of the waters and their subsequent consumption, according to the explanation of the Social Welfare Secretariat of the municipality, produces respiratory disorders, colics, nausea, high incidence of gastrointestinal ulcers, vertigoes, yellowish coloration of the skin, slow healing of wounds, renal symptoms and, though somewhat less frequently, pains in the locomotor system.

For that reason, the need to avoid the consumption and use of these waters has been widely publicized. The municipality supplies water to the population in special trucks, a service which is interrupted on Saturdays, Sundays and holidays thus creating a difficult situation.

It should be pointed out that according to technical reports, a process of nearly 20 years will be necessary before the underground waters are purified.

8414
CSO: 5000

BRICK FACTORY CREATES HEALTH PROBLEMS FOR NEARBY RESIDENTS

Buenos Aires CLARIN in Spanish 13 Jul 79 p 23

[Text] A large number of residents of Villa Luzuriaga, in La Matanza District, complained against a factory for crushing brick debris located in Simbron, between Gutenberg and Ombu. The reason for the lodging of the complaint is that the operation of the enterprise in question contaminates the air, and the work is being done "in a primitive, unhygienic and uncomplying plant."

"This factory," Juan Carlos Mascitti commented, "carries out its activity on grounds measuring 20 by 32 meters and started operating early in April of this year. The operators work from 0630 to 1830 hours Monday through Friday, and from 0630 to 1300 hours on Saturday. We cannot imagine who could have authorized this crushing operation, which is surrounded by dwellings in addition to the fact that the conditions under which those people work are precarious."

Trucks

The arrivals and departures of trucks is another inconvenience affecting the neighborhood. "They obstruct the street," Christina B. de Gomez said, "which is not suited to take care of the continuous movement. Therefore, there are several sections that are close to cracking."

Another problem created by this situation is the fine dust emanating from the factory. "The fallout of particles discharged by the machines is incessant. The houses next to the concern," Luis Bonina said, "have dust everywhere one looks.

"Housewives have to clean constantly, and it is practically impossible to hang out clothes because they are instantly covered by the fine dust. I believe also that it can be a health hazard to both children and adults.

"We are not against the source of employment," he continued. "What we request is that it meet the minimum health requirements. Note that the machinery in use there must be very antiquated, because it makes an awful

noise that wakes up the soundest sleeper whenever it goes into operation. Moreover, it operates all day long and, as one can imagine, the poor children who need to rest cannot do so."

Solution

The complainers suggested a way out for this situation. "We believe," Angel Olguin said at the end, "that the proper thing is to have this factory move to a place better suited to its activity. This, in our opinion, is not an area for crushing up bricks and much less under the conditions in which they are doing it."

8414
CSO: 5000

POLYTECHNIC INSTITUTE ANALYZES OIL WELL ACCIDENT

Paris AFP in Spanish 2317 GMT 14 Aug 79 PA

[Text] Mexico City, 14 Aug (AFP)--In a press communique issued here today, the National Polytechnic Institute (IPN) indicated that the IXTOC-One oil well accident is within the risk factor with which the world's oil companies operate. The report was issued by a committee formed by IPN investigators to analyze the causes and effects of the 3 July accident at the well located off the coast of Campeche State in the Gulf of Mexico.

The committee reported that only 6 to 8 percent of the oil, which spills daily into the sea, is not being burned or recovered "primarily" due to the swells which displace the barges and the containment barriers.

Regarding the crude dispersed over the ocean's surface, the committee explained that "oilslicks, which are only .1 to 10 micrometers thick, have occasionally been found." By means of explanation, the committee said that a barrel of oil could cover an area of 156,000 square meters at a thickness of 1 micrometer. It also said that Mexican Petroleum (PEMEX) technicians are capable of complying with regulations and are using the necessary security equipment. Nevertheless, the IPN scientists and technicians admitted that a contamination problem still exists but that its final effects "cannot yet be determined because a natural degradation of the oil is occurring.. Some of it is being absorbed by the environment itself."

CSO: 5000

BRIEFS

AID FOR FLOOD VICTIMS--Militants of the Beninese revolution: Due to the heavy rainfall this year in Mono Province which caused the Mono River to overflow its banks, several districts in this province were flooded. On Wednesday, 15 August 1979, a government delegation led by comrade minister of industry and handicrafts, dean of the Revolutionary Military Government, went to the disaster area to ascertain the damage caused by the flood. In the face of the gravity of the damage the Revolutionary Military Government makes a militant and patriotic appeal to the whole nation to come massively in aid of our distressed countrymen of Mono. Militants of the Beninese revolution, state corporations, provincial firms, private companies and benevolent organizations are requested to send aid to the CEAP [expansion unknown] of Mono. Various forms of aid such as foodstuffs, clothes, medical supplies, and so on should reach Mono Prefecture's office in (Lokopac). All aid in cash should be sent to the special account for Mono Province, No 3620001/69R66, at the (Lokopac) branch of the Commercial Bank of Benin. Get ready for the revolution, as the struggle continues! [Excerpt] [Cotonou Domestic Service in French 1930 GMT 27 Aug 79 AB]

CSO: 5000

LAKE MALAWI SAID RISING STEADILY, FLOODING THIS YEAR

Salisbury THE HERALD in English 30 Aug 79 p 8

[Text] Blantyre. Lake Malawi, the holiday playground in central Africa, is going to overflow.

The sparkling blue water, where hundreds of South Africans holiday every year, turned vicious during the last rainy season and turned lakeside rooms of some of the resor' hotels into swamps.

When the floods retreated they took with them large stretches of the white beaches for which this inland sea--it is the third largest lake in Africa--is famous.

Lake Malawi is the main feature of this country's tourist industry so no expense or effort were spared in cleaning up the mess.

But even as hoteliers comforted themselves that the floods were due to unusually heavy rain in the interior, a more serious problem remained: freak rains or not, the lake is still steadily rising.

There are as many theories to explain the phenomenon as there are colourful tales from Lake Malawi's past.

One opinion is that the hippos which used to eat the vegetation in the Shire River flowing out of Lake Malawi have been decimated by hunters which means the river is clogging up which means that less water flows out.

Or so they say.

Another school of thought contends that, over thousands of years, the lake floor has become saturated: less water is seeping away.

But, likeliest of all, is the stark fact that the weather pattern is changing. Simply, there is more rain and less sun. More rain means more inflow from the lake's 14 main feeder rivers and less sun means less evaporation which is the main factor keeping the water level of the 23 300 square kilometre lake down.

Many of the resort hotels were built as close to the water's edge as they could be, so the relentless rise of the water is a serious long-term threat to operators who bill their beautiful, bilharzia and crocodile-free lake as "paradise."

With no tides or currents this is ideal water-sport and fishing country and for the less energetic there is the Llala 2, a 620-tonne motor vessel which takes passengers on a week-long round trip to the lake calling in at colourful fishing ports all the way up to the Tanzanian border.

The lake shore and its islands are dotted with historical curiosities. One such is a cannon taken from the gunship Gwendolen which crippled its German adversary, the Hermann von Wissman, in what must have been the First World War's only inland naval battle.

There is, of course, no immediate threat: just as continents and mountains were fashioned over milleniums, so it will take many years before Lake Malawi brims over.

But this year's floods were an ominous pointed and, in time, it appears inevitable that some of the hotels will have to be sited further back from the water.

CSO: 5000

EXPERTS TO STUDY EFFECTS ON KUISEB RIVER WATER SUPPLY

Windhoek THE WINDHOEK ADVERTISER in English 20 Aug 79 p 3

[Article by Rianne Fourie]

[Text]

A MAJOR environmental project on the Kuiseb River, involving experts from various disciplines, was launched in Windhoek last week.

The project kicked off with a meeting of the steering committee of the Kuiseb Environmental Project in Windhoek on Tuesday and Wednesday.

At this stage details of the meeting are being kept secret. The chairman of the committee – not the first on the Kuiseb River – Dr Wessel van Wyk, Director of Geological Survey in Pretoria, would only say that the ecology, hydrology and gemorfology (movement of the dunes) of the Kuiseb River in the Namib Desert will be monitored.

He said more information on the Kuiseb River and the project would only be made available at a press conference on September 5 or 6 when the liaison committee will meet at the annual general meeting of the CSIR.

Among the departments involved were Nature Conservation and Tourism, Geological Survey, Water Affairs, Agriculture, Forestry, the weather bureau and universities.

Dr van Wyk stressed that it was not a research project but a monitoring of the level of the underground water basins in the Kuiseb River, the vegetation, the shifting of the dunes and all other aspects.

"We want to be certain when and what changes occur, for instance whether the water level drops with continued water extraction," he said.

This is the second committee formed to study or monitor the Kuiseb River. The Director of Nature Conservation, Mr Berrabe de la Bat, already initiated efforts to protect the Namib environment in 1958. In the sixties a monitoring from the air was started.

The first Kuiseb River committee was, however, formed in 1972 with specialists from various disciplines studying the river in detail from its headwaters in the Khomashochland down to the dunes blocking the flow to the Atlantic Ocean, Dr Beatrice Sandelowsky writes in the May/June issue of African Wildlife.

Yet the problem last year reached such proportions that the then Administrator General, Mr Justice M T Steyn, again called a meeting on the Kuiseb River dividing the flat stony desert in the north from the high sand dunes in the south.

The Kuiseb River has three underground water basins that get water from the annual rainfall. In the last few years, however, the outflow has increased more than the inflow.

Dr Sandelowsky writes in her article: "The coastal towns of Swakopmund and Walvis Bay are tapping the supplies of underground Kuiseb water. But a fatal blow to the flow of Kuiseb water is being dealt by mining activities which have recently been started in the Namib desert.

"It is estimated that the quantity of water being drained from the Kuiseb by one huge pipeline is so enormous that it will have exhausted the supply of un-

derground water in the Kuiseb valley by 1980."

She adds that one suggestion to prolong the life of this subterranean reservoir was to fell all the trees growing in the river bed as this would cut down on the amount of water "lost"-, through transpiration through the leaves of the plant.

A recent issue of the World Mining Journal reported that Rössing Uranium mine uses about 6 million gallon water per day of which the bulk comes from the Kuiseb for washing uranium.

The Director of Water Affairs, Mr Charles Truebody would not comment on this. He would not say what percentage of the Kuiseb water goes to Walvis Bay and Swakopmund and what to Rössing.

In the meantime another pipeline from Rössing to the Omaruru River has been completed and it is foreseen that the problem of the conservation of the ecology will soon also be felt in the Omaruru River.

Besides this at least three more companies are interested in opening uranium mines. An added investment of R1,5 billion rand is expected in the next five years.

There are two schools of thought on the Kuiseb River: the ultra conservatists and the ultra development orientated. The one feels the protection of the vegetation is more important than the development. But as one authoritative source said: "Should the development which could mean a neat income of a few billion randa, win, one must just remember once the vegetation is lost, it is lost for always."

Another environmentalist expressed the opinion that desalination will be the eventual course. "If we continue to tap our underground reservoirs it will in any case be exhausted in the next five years. Where will the mines then get their water?"

But desalination could have an initial cost of about a billion rand. It could be cheaper to lay a pipeline to our northern rivers: the Kunene, Kavango or Caprivi, said an economist.

He felt desalination is out of the question without nuclear power. And nuclear power for SWA is also an impossibility. It is not only non feasible economically, but politically it is totally out of the question. Besides that, SWA does not have the expertise.

Whatever the outcome of the "monitoring" of the Kuiseb River, it seems that it will be many years before any steps will be taken, if at all.

In the meantime the only inhabitants of the Kuiseb valley, the small Topnaar tribe has to make a living. How long they will still be able to survive there before they are forcibly moved is one of the problems that will have to "monitored."

CSO: 5000

BRIEFS

FLOOD DAMAGE ASSESSED--Kinshasa, 30 Aug AZAP--Citizen Mushobekwa Kalimba Wa Katana, state commissioner for public works and territorial development, returned to the capital today after having completed a 9-day visit to Shaba Province where he was sent by the Executive Council to assess the damage caused by a recent flood in the province and in particular in the regions of Kalemie, Kongolo, Kabalo, Malemba Nkulu and Kamina. The state commissioner together with a team of engineers from his ministry launched a program of reconstruction of the damaged hospitals, schools, bridges and other public buildings. The state commissioner has revealed that the work, which starts next week, would be completed in November and would cost 2 million zaires. [Summary] [Kinshasa AZAP in French 1750 GMT 30 Aug 79 LD]

INDIAN AID FOR DROUGHT--In Matadi on 18 August 1979, as part of the aid announced last year to people affected by the drought in Bas Zaire Region, Indian Ambassador M. K. Khisha turned over a shipment of 400 tons of wheat and 100 tons of rice to Momene-Mo-Mikengo, assistant regional commissioner. The ambassador from India had already, on 6 Jul, given the Ministry of Public Health 1,000 kilograms of medicines and food for children. [Kinshasa ELIMA in French 21 Aug 79 p 1]

CSO: 5000

SCIENTIST DISCUSSES PLAN FOR REDIRECTING SIBERIAN RIVERS

[Editorial Report LD] Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 7 August 1979 carries on page 2 a 2,500-word article by G. Voropayev, corresponding member of the USSR Academy of Sciences and director of the Water Problems Institute entitled "Whither Will the Ob and Pechora Flow?" and published under the rubric "We Answer Readers' Questions."

In the article Voropayev answers questions on various aspects of the plan to redirect northern rivers southward to replenish the Sea of Azov and the Caspian and Aral seas and to provide extra water for irrigation. The article says there are "no insurmountable technical problems" in the projects and stresses the ecological and environmental aspects of the plans.

"It can be stated," the article says, "that the redistribution from north to south of 25-30 cubic kilometers of water in the European part of the country and 25 cubic kilometers in the Asian part will not have major regional, let alone global consequences and will not cause climatic changes in the Arctic zone or on the continent. But at the moment we cannot predict the effect of the redirection of the considerably bigger amounts which may be needed at subsequent stages."

The article goes on to say that "the positive effects of the redirection will be felt chiefly in the country's southern regions--on irrigated land in the Volga area, in Kazakhstan and in Central Asia"--and that the effects may be very considerable.

"The main adverse consequences," Voropayev says, "will be evident in the places where the reservoirs are created, on the river reaches below the water collector, in estuaries, in zones adjacent to seas and also in lakes with variable water levels and currents. Here the redirection may have an adverse effect on fish reproduction and on catches and will change the conditions affecting transport operations and land utilization." The article also mentions possible "adverse consequences" in southern regions and states that "extra in-depth research" is needed in this sphere. Voropayev says that a "fundamentally new approach to the development of irrigation in steppe regions and new techniques and methods are needed" in order to avoid loss of Chernozem fertility.

The concluding part of the article concerns the general approach to planning: the need to extend the redirection program beyond 1980, to link it with "general problem of the use of the environment" and to make "super-long-term forecasts of natural and social processes" in order to answer all the questions connected with the redistribution of water resources.

CSO: 5000

PAPER DISCUSSES USES OF RADIATION IN AGRICULTURE

[Editorial Report LD] Moscow SEL'SKAYA ZHIZN' in Russian 31 July 1979 publishes on page 3 a 1,500-word article by N. Korneyev, academician of the V. I. Lenin All-Union Academy of Agricultural Sciences, and Doctor of Biological Sciences R. Aleksakhin, under the rubric "Science--for Production," headed "Horizons in Radiology." The article discusses work on monitoring radiation levels in the areas around nuclear power stations and uses of radiation in agriculture, including pest control.

CSO: 5000

ODESSA SCIENTISTS STUDY OCEAN POLLUTION

Tallin SOVETSKAYA ESTONIYA in Russian 25 Jul 79 p 1

[Article by TASS correspondent: "Vulnerable Ocean"]

[Text] The bulk of the contaminants falling into the ocean is not spread in its gigantic thickness, as it was considered until recently, but is concentrated in the most vulnerable ecological zone: at the boundary of the division of the water surface and the atmosphere. Such a conclusion was reached by scientists of the Odessa department of the State Oceanographic Institute as a result of studies conducted in the Northeast Atlantic on the weather ships "Passat" and "Ernst Krenkel'."

During the winter windy period the oceanologists conducted observations on standard cross-sections near the Faeroe and Shetland islands. It turned out that even under the conditions of storms the upper layer of water was more saturated with contaminating substances. An experiment repeated a year later gave analogous results.

The conclusions of the Odessa oceanologists, writes TASS correspondent V. Shamsha, give grounds for serious reflection. The rapid process of accumulation of contaminants in the thin surface layer leads to changes in the regime of heat- and mass-exchange of the water and can cause irreversible ecological changes in the life of the ocean inhabitants. It is known that developed namely in the upper layer of water is plankton, the starting unit of productivity of the ocean, one of the main producers of oxygen.

And so, the scientists delivered the "diagnosis." Now it is a matter for practical actions, connected with reduction of the discharges of industrial wastes into the ocean, especially of oil and oil products from transport vessels. These and other proposals were set forth by the oceanologists in a summary international survey about the results of studies of contamination of the World Ocean performed by them in the course of recent years in the Atlantic.

10908
CSO: 5000

KAYA RIVER POLLUTION CASE DETAILS GIVEN

Moscow IZVESTIYA in Russian 22 Jul 79 p 3

[Article by L. Kapelyushnyy, IZVESTIYA staff correspondent, Irkutsk: "Counter Claim"]

[Text] In this story at first glance there are no serious offenders nor any who have been offended. It is a "quiet" criminal case, and in total a fine of 100 rubles from Vasiliy Semenovich Gladkov, chief engineer of the Irkutsk Oil and Fat Combine, for pollution of the Kaya river.

The Kaya, a small river, begins in the blue Sayans. In the spring the graylings come to spawn in the Kaya. More accurately, they used to come. For seven years the industrial discharges of the combine have struck the river off the list of water bodies of the first category.

Gladkov was obliged, according to the instructions of the post, "to provide measures for combatting pollution of the water bodies by industrial discharges, runoff and wastes." These duties were not fulfilled by him duly. Thus, during 1977-1978 with respect to runoff of the storm collector discharged into the Kaya in 1977 was 210.5 kilograms of fats, and in 1978 more than one and a half tons.

There is no doubt as to V. Gladkov's gulit and it has been proven. But he has acknowledged it only partially.

Without placing in doubt the justness of the verdict, we will say that actually guilty of pollution of the Kaya is not just the chief engineer. The Kaya has perished also because the planners did not provide from the beginning at the combine the purification facilities. The Kaya has perished due to the indifference of Roszhirmaslopron [RSFSR Trust of the Oil and Fat Industry], which gave its blessing to construction of the combine without these purification facilities. The Kaya perished in sight of many responsible persons and with their tacit consent, their position an immoral one, although also not subject to jurisdiction.

If we speak openly, the trial about pollution of the river was delayed for seven years. In Irkutsk there is no other enterprise besides the

oil and fat combine which would so often be inclined to contamination of the environment. The reports of leaders of the combine have been heard at sessions of the people's control committee, the permanent commission of the city soviet, and at the meeting of the presidium of the city nature conservation society. Strict judgements have been pronounced, right up to petitioning to the executive committee of the city soviet about suspending the production activity of the enterprise.

Strange as it may seem, the numerous inspections, the strict sessions and threatening decisions convinced the leaders of the oil and fat combine of their own complete impunity. Everything took its normal course.

Beginning with 1972 the combine was ordered to cease operation six times. Five times it obeyed the order, but in March of last year it did not. At the same time as the resolution about stopping the enterprise the Baikal basin administration also fined the director of thecombine Boris Vasil'yevich Badula for violation of the norms of industrial sanitation in the amount of 30 rubles. The director also refused to pay the fine and brought suit against the administration. As they say, a counter claim.

"I do not agree with the resolution of the Baikal basin administration. The combine does not discard fats into the sewer system, such facts are not recorded in the shift log of the sewer and pumping station," wrote B. Badula in his statement. "If the fat does fall into the sewer system, it is then fished out. As regards the construction of purification facilities, there is planning and estimate documentation at the combine for the sum of 1 million 150 thousand rubles. But the RSFSR Ministry of the Food Industry is not selecting a contractor."

I ask you to pay attention: the director never mentioned that according to the position instructions he is not the one responsible for the work of the purification facilities and industrial sanitation. For now he seems to be throwing his weight around: I want this, and the combine will not stop, and you will not receive the fine.

The facts set forth in the director's statement, to put it mildly, do not correspond to reality. Take, for instance, the documentation on construction of the purification facilities--the fruit of the director's imagination. It should have existed, but due to the fault of the combine leadership for several years it was coordinated, refined, and ultimately became out of date.

The director has given out the desired for the real, affirming that the falling in of the fats is not recorded in the shift log of the sewer and pumping station.

It is possible that knowing the worth of his own "facts," Boris Vasil'yevich also did not appear at the court sittings which were set with respect to

his claim. This miserable tale about three ten-ruble notes has continued for half a year. During this whole time tens of thousands of rubles of the combine's raw material has floated away in the sewer system. The patience of the Baikal basin administration has come to an end and it has turned to the procurator's office of Sverdlovskiy Rayon in the city of Irkutsk. The investigation was started. And then B. Badula remembered about the post instructions, brought them into the light of day and washed his hands of it...

During the whole investigation Boris Vasil'yevich gave the impression that what was going on did not concern him. Gladkov was guilty, let him answer for it. And B. Badula did not even appear in court, although he was obliged to appear. I have in mind not only the moral obligation to society for the ruined river, not only the moral obligations to his own first deputy and comrade in work. B. Badula's presence was compulsory by law.

Without detracting from Gladkov's guilt, I should specify: according to the position instructions the director is also responsible for the status of industrial sanitation. This is understandable. But this is a matter not of a case, not of an individual fact, but about a long-standing policy of the enterprise. No matter what high powers the chief engineer has, the right to make the final decision still remains with the director. And it is not by accident that for all the years that namely Boris Vasil'yevich dealt with the inspecting agencies, negotiations were in progress about the construction of purification facilities. Why am I giving so much attention to this? The fact is that not having recognized B. Badula as responsible for contamination of the environment, the investigation by-passed important facts.

The waters discharged into the sweer system should have at the outlet to the city collector not more than 60 milligrams of fats per liter. But in March 1978 the amount of fat greatly surpassed this figure. According to the roughest calculations, about 18 tons of fat went out with the water. This record was broken in August.

Unfortunately, noone has estimated this way how much fat the water carried away. But, I assume, and it is clear, that the quantity of it exceeds by many times those not quite two tons that figure in the sentence for V. Gladkov.

Why did it turn out in this way? The whole thing is that the combine's industrial discharges do not go immediately into the river, but they fall into the settling tanks of the city purification facilities. And there is no precise information on how much fat settled in the settling tanks, or how much went further into the Angara. Neither the Baikal basin administration, nor the fish protection inspectorate, nor the specialists of the hydrometeorological service, as it turned out, performed such observations. Thus the main question became the pollution of the Kaya only through the storm collector system.

The storm collector system is a network of canals on the territory of the combine along which rain and thaw waters flow. The presence of fats in them is intolerable. So where, would it seem, did they come from?

In order to understand this it is necessary to see the territory of the oil and fat combine. I have had occasion to be there more than once, and each visit left a bitter impression on me. Dirt, bundles of rubbish, leaks of fat. It was not our concern to study the technological regime of the enterprise and the status of labor discipline. But namely through this lies the path to cleanliness and model order...

I remember in March of this year I met in the basement of the auxiliary building the deputy procurator of the Sverdlovsk region of Irkutsk, who investigated the case about pollution of the Kaya. This basement was flooded under the ceiling with oil. As it was ascertained subsequently, in the fall of 1978 either a pipe broke somewhere, or the oil went through the edge of the banks at the oil-pumpling station, but the basement was flooded. Six months later the spring floods flooded the basement and then, now along with the oil, came out. The oil layer was measured--it was about half a meter. And the length of the basement, by the way, is about 100 meters. So that the rumors that supposedly the basement absorbed several hundred tons of raw material seem not far from the truth.

There was another opinion, though. For instance, the director of the combine, B. Badula:

"What hundreds of tons? We pumped out the wash into tanks, let it settle, collected the oil... a total of 50 tons. And this oil was not lost, it was put to use, at the soap-making plant..."

Now it is understandable why the by-products of fats at the combine exceed the planned norm by 322 tons and 922 kilograms. But the irreversible losses are 20 tons above the normative losses.

It seems to me that the main cause of pollution of the Kaya river was exactly the mismanagement of the leaders of the enterprise. Economic damage is not contained in the framework of the article of the Criminal Code concerning pollution of water bodies.

During seven years of operation of the Irkutsk Oil and Fat Combine--after the start-up of the second phase--up to now it has not reached its planned capacity. Its output is of low quality. And clearly seen in the turbid stream of the Kaya water are the reasons preventing the combine from getting on its feet--the lack of punishment, lack of responsibility and mismanagement.

How can we help but remark: when the talk was about the hard-earned 30 rubles, Boris Vasil'yevich Badula went to court. But when tens of thousands of public money went out with the water, he did not pay attention.

The bitter arithmetic is that five stoppages of the combine in recent years have brought losses exceeding several-fold the cost of the latest purification facilities. It remains only to be surprised that neither local soviet agencies nor Roszhirmasloprom inquired as to what was behind these extraordinary measures of the inspecting agencies.

The case of contamination of the Kaya cannot be put in the ranks of the ordinary. In it the law about protection of the environment came to life. Up to then there had been no such trials in Irkutskaya Oblast. But the law is not only a tool of punishment, but also an instrument of investigation. And in our story it is important not only to determine what damage was done to the river, but also why this happened. And then the statement by V. Gladkov about partial acknowledgement of guilt will sound different. If part of the guilt was acknowledged, who will answer for the remaining share of it? The justness of the law consists not only in that the innocent do not come to trial, but also that the guilty do not avoid punishment.

10908
CSO: 5000

CONSERVATION MEASURES PLANNED IN GEORGIAN SSR

Tbilisi ZARYA VOSTOKA in Russian 3 Jul 79 p 1

[Article: "In Honor of World Environmental Protection Day"]

[Text] The Central Committee of the Communist Party of Georgia and the Council of Ministers of the Georgian SSR have passed a joint resolution about implementing in the republic certain nature conservation measures in connection with the holding of World Environmental Protection Day on 5 June 1980.

In the document accepted it is noted that in recent years thanks to the tireless concern and attention of the CPSU Central Committee and the Soviet government in our country the movement for protection of the environment and rational utilization of natural resources has taken on great scope.

In fulfillment of the historic decisions of the 25th CPSU Congress and subsequent Plenums of the CPSU Central Committee, Ukazes of the Presidium of the USSR Supreme Soviet, joint decisions of the CPSU Central Committte and the USSR Council of Ministers on questions of nature conservation, and other legislative acts about protection of the environment and natural resources adopted in accordance with the USSR Constitution, in the republic definite work has been done in this respect, the effectiveness of scientific research has been increased, there has been an improvement in the dissemination of scientific and technical information, in the publication of nature conservation literature, and the conduct of different publicity measures, and work for training and education in the field of protection of the environment is being conducted somewhat more effectively.

Along with this in the matter of bringing full state order into the field of protection of nature in the republic there are still essential shortcomings. One of the reasons for such a situation is the insufficiently well thought out work on nature conservation training and education of all strata of the population, especially the youth. An acute shortage of

textbooks on nature protection is felt, the publication of popular science literature is being held back, and agitation using visual aids is lacking. The majority of primary organizations of the Georgian Nature Conservation Society is working poorly; the potentials of means of mass information are not being used in full measure; there is a lack of due purposefulness, coordination, planning and organization in the propagandistic and educational work in the field of protection of the environment, the participation in it of the scientific, technical, pedagogical and creative intelligentsia is weak, and the role of the broad community is insignificant.

Considering the serious lag in the matter of protection of the environment and rational utilization of natural resources and with the aim of wide dissemination of knowledge about the nature of the home territory, improvement of nature conservation propaganda, educational and enlightenment work in this field, and increasing the role of the community in nature conservation, the Central Committee of the Communist Party of Georgia and the Council of Ministers of the Georgian SSR accepted the proposal of the State Committee for Nature Conservation of the Georgian SSR and resolved to hold nature conservation months annually, beginning with 1980, in June, timing them to World Environmental Protection Day, 5 June.

During the conduct of the nature conservation months it is necessary to increase the activity of all nature conservation services, ministries and departments, scientific, academic and planning organizations for conservation of soils and minerals, water resources, the atmosphere, forests and preserves, flora and fauna, all living and inanimate nature.

The measures conducted should contribute to intensifying the struggle against all violators of existing nature conservation rules, against poaching, all manifestations of careless, irresponsible utilization of natural resources. They should contribute to broad dissemination and popularization of knowledge about nature with the aid of all possible means, especially to the intensification and expansion of nature conservation propaganda, training and education.

The oblast committees, rayon committees and city committees of the party, the Councils of Ministers of the Abkhazskaya ASSR and Adzharskaya ASSR, the executive committees of the Council's of People's Deputies of Yugo-Osetinskaya autonomous oblast, rayons and cities, ministries and departments of the republic are instructed to render all-possible assistance and take an active part in the preparation and conduct of nature conservation month.

Other organizational and political measures for improvement of the protection of the environment are provided by a resolution of the Central Committee of the Communist Party of Georgia and the Council of Ministers of the Georgian SSR.

10908
CSO: 5000

WORK DONE, PLANNED TO CLEAN UP LAKES NEAR RIGA

Riga SOVETSKAYA LATVIYA in Russian 3 Jul 79 p 2

[Article by M. Matisone, candidate of chemical sciences, senior scientific associate of the Institute of Biology of the Latvian SSR Academy of Sciences: "Clean Waters for the Lakes"]

[Text] The lakes are a favorite place of relaxation for Riga people. They come here to sit with a fishing rod, to tan in the sun, to go for a boat ride. But this is not the only reason the lakes are valuable for us. The water of some of them is used for Riga's water supply. From Lake Yugla following purification the water comes directly to our apartments, and from lake Baltezers it goes to basins for artificial filling of the reserves of ground waters by means of infiltration.

The good service of the lakes, it would seem, deserves reciprocal care. Unfortunately, our debt to them is great. The natural regime of the lakes has been disturbed as a result of short-sighted--both from the position of ecology and that of economics--activity of industrial enterprises. The falling into the lake of insufficiently purified industrial and household and domestic waste waters leads to fatal consequences. Over 10 enterprises are polluting Lake Kish directly or by means of purification facilities which are operating very ineffectively. Adding its own "bit" to this flow is the Shmerl'upite river and the "Sirius" city storm collector. The chief polluters of the other lake, the Yugla, are the paper mill and the streams of the Strazdupite, into which waste waters from the Yugla housing area fall.

From year to year in the lakes there is a worsening of the conditions of habitation of water organisms and fish. The matter is leading to mass destruction of the fish, particularly the eel. This is why a number of organizations--the Institute of Biology, the Institute of Inorganic Chemistry of the Latvian SSR Academy of Sciences, the Administration of the Hydrometeorological Service, and the Baltic Scientific Research Institute of Fishing have conducted a comprehensive integrated study of the water bodies adjacent to Riga.

The specialists have established that accumulating in the lakes are organic substances, for the oxidation of which much oxygen is expended.

Especia'ly polluted is Lake Kish, to the share of which fell the greatest amount of industrial discharges. Very polluted is the water near the Yauntsiyemskaya Paper Mill, the TETs-1 [heat and electric power plant], in the region of the Yugla channel. In the lake there has been a sharp reduction in the content of food organisms for the fish, and in the soil alongside the paper mill a "dead zone" has formed. By comparison with 1955 the fish catches have been reduced by 50-70 percent. Now the degree of contamination of Lake Kish is such that it is losing the ability of self-purification. There is one way out: to cease the fall of unpurified waste waters into it.

The TETs-1 and the paper mill have the technical documentation for reconstruction of old and construction of new purification facilities. However the means allocated are being used very slowly. With regard to the Yugla paper mill, it does not have either purification facilities or the technical documentation for their construction.

Purification facilities are lacking also at a number of other plants: the electric light plant, "Mangali," the glass and mirror plant, and "Rigakhimmash" [Riga Chemical Machine Building Plant]. It is possible to include in this list also those enterprises where the sewage supposedly undergoes purification, but this process is practically ineffective (TETs-1, the "Al'fa" and "Rigas audums" production associations, the "Sirius" storm collector and others).

In order to clean up the lakes it is necessary to eliminate the "dead zones" that are there, having removed the accumulated wastes of the paper mills. By the method of mowing it is possible to stop the extreme overgrowth of the lakes with vegetation. It is also possible to combat the sludge. For this it is advisable to create zones of plantings around the water bodies. It is necessary to cease the use of chemical weed killers and fertilizers closer than 300 meters from the waterline.

It is possible to return the former purity to our lakes in the course of several years, however this task cannot be solved one-sidedly. It requires a complex approach, the efforts of all ministries, departments and scientific institutions. In the near future the scientists and specialists will reduce to a single complex program their conclusions and proposals, which will make it possible to plan a number of practical measures.

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CONSERVATION, OTHER PROJECTS ORGANIZED IN ESTONIA

Tallin SOVETSKAYA ESTONIYA in Russian 4 Jul 79 p 3

[Article: In the Council of Ministers of the Estonian SSR"]

[Text] Considered at the session of the Estonian SSR Council of Ministers which took place under the leadership of the chairman of the republic Council of Ministers V. Klauson was the question of additional measures for increasing the protection of the Baltic Sea basin against pollution. A report was presented by the first deputy chairman of the Estonian SSR Council of Ministers A. Ryuytel'.

The government noted that in the republic definite work has already been done in this field. Thus, during 1976-1978 purification facilities were put into operation in the cities of Kygeva, Payde, Valga, Elva and other places. The purification facilities put into operation during the first three years of the current five-year plan have made it possible to increase the volume of biological purification of waste waters 1.7-fold. Put into operation was the underway complex of pilot facilities for the sewer system of the city of Tallin with a cost of 28.4 million rubles of fixed capital.

Being continued is the construction of purification facilities for sewage in Tallin, Narva, Vyru and a number of other cities, urban settlements and at industrial and agricultural enterprises. For the purpose of protecting the air basin against contamination installations were erected to trap and neutralize harmful substances at the Akhtme TETs, the Estonian and Baltic GRES [state regional electric power plants], the Silikat association and other enterprises. There was an increase in the effectiveness of the action of purification facilities for waste waters in rural regions, and of gas and dust-catching installations at industrial enterprises.

In the adopted resolution the ministries and departments, city and rayon executive committees, associations and enterprises of union subordination are instructed to insure unconditional fulfillment of all the nature conservation measures envisaged by the State Plan of Economic and Social Development of the Estonian SSR for 1979. Here especial attention has

been given to development and implementation of appropriate measures for each association, enterprise and farm, to improving the quality and effectiveness of planning decisions applied, and to implementation of the necessary measures regarding improvement of the technical servicing of sewer system purification facilities.

Taking part in the work of the session of the government of the republic were leaders of central institutions, deputy ministers, chairmen of city and rayon executive committees, responsible officials of the Estonian SSR Gosplan and the Administration of Affairs of the Estonian SSR Council of Ministers.

A regular session of the Presidium of the Council of Ministers of the Estonian SSR was held.

On the Work of the Pyarnu City Executive Committee

In reviewing the work of the Pyarnu City Executive Committee concerning insuring fulfillment of the city's plan quotas for the 10th Five-Year Plan, the government of the republic noted that enterprises and organizations of the city during 1976-1978 managed the plan assignments for all basic indicators. This made it possible to direct additionally 1.8 million rubles for financing economic and social development of the city. The city executive committee achieved certain success in improving the conditions for labor, everyday life and leisure of the workers, for fuller satisfaction of their material and cultural needs. In accordance with the demands work with the letters and statements of the citizens was set up.

Along with this the Pyarnu city executive committee still is not giving sufficient attention to complex development of the city, it is not doing a good job in attracting the means of enterprises and organizations for construction of facilities for social and cultural use. The enterprises are inadequately mobilized for seeking and utilizing more completely the internal reserves for the purpose of successful realization of planning assignments and socialist pledges. There is no concrete plan of trends of development of the economy of Pyarnu as a resort. For a number of years state capital investments have not been put to use, the building of municipal facilities is being done poorly, and questions of strengthening the material and technical base of the city repair and construction organizations are slow to be solved.

An expanded resolution was adopted aimed at eliminating the noted shortcomings.

For Better Regulation of the Network of Schools of General Education

For the purpose of improving the network of schools of general education the Ministry of Education of the Estonian SSR was authorized beginning in the 1979/80 academic year to open a number of new schools, and to

reorganize or eliminate certain operating schools. To operate in the republic are 492 day schools of general education, 49 evening and correspondence secondary schools, 42 specialized boarding schools, speech therapy and auxiliary schools, and 3 sanatorium forest schools.

The Ministry of Highways, the Ministry of Education and the rayon executive committees have been instructed to provide free travel to school and back for the pupils of rural schools which were eliminated or reorganized, and also free travel to pupils of senior classes of secondary schools to the centers of labor training and back.

Also reviewed was the course of construction of the Lasnamyae residential district in Tallin, and there was a discussion of the work of the Estonian SSR Ministry of the Meat and Dairy Industry regarding providing more efficient processing of animal husbandry raw material, and so on.

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CSO: 5000

SIBERIAN BAKSA RIVER FLOODING REPORTED

Moscow KRASNAYA ZVEZDA in Russian 13 May 79 p 2

[Article by Major A. Yurkin, KRASNAYA ZVEZDA correspondent: "The Baksa Has Receded"]

[Text] Krasnoznamennyy Siberian Military District. You will not immediately find on the map the taiga river the Baksa, which is on the border of Tomskaya and Novosibirskaya oblasts. But this small Siberian river during the days of May brought the people many surprises. Having absorbed into itself the spring floods of numerous swamps, it flooded several population centers of Kolyvanskiy Rayon.

The local residents turned for help to the soldiers of the Krasnoznamennyy Siberian Military District. A group of field engineers, headed by the officer of the district headquarters Lt Col V. Krasnikov, immediately flew by helicopter to the region of the flooding. The helicopter crews were commanded by military pilots 1st class captains V. Sharov and A. Bortnikov. Circling over the region showed that threatened were a bridge, structures of the lumber industry establishment, and animal husbandry facilities.

It was necessary to blow up the ice jams. The helicopters hovered over the ice floes. The field engineers, led by Capt V. Kuz'menchuk and Ensign V. Kravchenko, lowered the explosive and lit the fuse. Explosions sounded over the taiga river until late in the evening. When the water subsided and the danger had passed, the neighboring Shegarka river began to show its temper. The situation again became complicated. The helicopter pilots headed north, and the echo of explosions again rolled over the taiga. The pilots flew to their own airfield and the field engineers disembarked only after they were convinced that there no longer was a threat to the people.

This spring is bringing a lot of trouble to the Siberians. But always the soldiers come to the assistance of the local residents at the difficult moment. Literally a day before the duel with the wayward Baksa, the field engineers, headed by communist Capt N. Stepov, eliminated an ice jam on the Ob'. They used hundreds of kilograms of explosives, and worked under exceptionally complex conditions. Thanks to the courage and skill of the soldiers many population centers were saved from flooding.

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NATURE CONSERVATION LAWS, WORK DISCUSSED

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 6 Jun 79 p 2

[Article by L. Yefremov, first deputy chairman of the USSR State Committee for Science and Technology: "The Most Important Condition of Life"]

[Text] Nature conservation and rational utilization of natural resources are an important part of the program of communist construction, they comprise a subject of great concern by our party, the Soviet state and the whole nation. Speaking at the session of the Presidium of the USSR Supreme Soviet on 16 May 1978, General Secretary of the CPSU Central Committee, Chairman of the Presidium of the USSR Supreme Soviet comrade L.I. Brezhnev stressed: "The Soviet Union is doing everything possible for protection of nature, of its plant and animal world, and mineral resources. This was bequeathed to us by Lenin." In order more widely to attract attention to the problem of the interrelations of man and nature, it was decided to hold annually a World Environmental Protection Day.

The most important place in the complex of measures adopted in our country for the protection and scientifically based, rational utilization of natural resources is occupied by the improvement of nature conservation legislation. Passed by the USSR Supreme Soviet, in particular, have been the Fundamentals of Water Legislation, the Fundamentals of Forest Legislation, the Fundamentals of Legislation about Minerals, and the Fundamentals of Land Legislation. The activity of the Soviet state in this field has found reflection in the new Constitution of the USSR.

Important stages in the development of work for nature conservation and rational utilization of natural resources have been connected with the realization of resolutions of the CPSU Central Committee and the USSR Council of Ministers, "On Strengthening Nature Conservation and Improvement of the Use of Natural Resources," and "On Additional Measures for Increasing Nature Conservation and Improving the Use of Natural Resources."

Much has been done for formation of a system of general union and union-republic agencies responsible for rational utilization of natural resources and their reproduction, and also which implement state control and

supervision over the status of the natural environment and the sources of its contamination. The State Committee of the USSR for Hydrometeorology and Control of the Natural Environment has been operating since 1978. Divisions for nature conservation have been set up in many ministries and departments. Operating in a number of union republics are republic agencies occupied with the solution of these problems. Planning has been improved. Introduced in the state plans of economic and social development of the USSR was a special section providing for assignments for nature conservation and rational utilization of natural resources.

Being realized successfully is a broad program of work for protection of the surrounding natural environment, for rational use and reproduction of natural resources outlined by the 25th CPSU Congress. As a result there has been an improvement in the status of certain rivers, lakes, and water areas of inland seas. In a number of large industrial centers there has been a reduction in the pollution of the air basin. There has been expansion in the scale of recultivation of land, and in the fight against soil erosion. Put into operation in 1976-1978 were facilities for purification of waste waters with a total capacity of 25.9 million cubic meters per day. This is 20.5 percent more than was outlined by the plans.

At many industrial enterprises planned and effective nature conservation work is being conducted, which is connected to a significant degree with the creation and introduction of new equipment and technology. At ferrous metallurgy enterprises, for instance, being expanded are the scales of introduction of units for dry slaking of coke, which make it possible to utilize the heat of red hot coke and to produce inexpensive steam of high energy parameters. In addition there is a significant reduction in the contamination of the air and water basins and there is a reduction in the expenditure of water for production purposes.

Put into operation at the Novolipetsk Metallurgical Plant in 1978 was an experimental industrial production facility for extraction of metal the production of output from slag. This makes it possible to produce additionally about 16,000 tons of metal per year.

In 1979 it is planned to put into operation the complex of equipment of a convertor shop with 200-ton assemblies with bottom blowing at the Metallurgical Plant imeni Dzerzhinskiy. In comparison with the convertors with upper blowing they will provide an increase in productivity and a reduction in the losses of iron with the waste gases.

At the Ivano-Frankovsk Plant for Fine Organic Synthesis of the Ministry of the Chemical Industry, put into operation ahead of schedule was an industrial installation for the production of 15,000 tons of nonionic surfactants per year. Production was started on products for fabric finishing at light industry enterprises, on foam suppressors for microbiological production facilities, and on modifying agents for production of chemical products. Development of these substances will make it possible to reduce the danger of pollution of waste waters and water bodies.

It should, however, be noted that in individual cities and rayons officials of chemical enterprises are not taking measures for reduction of harmful discharges. For instance, continuing in the city of Temirtau is the discharge of waste waters by the synthetic rubber combine, in the city of Dzhambul the atmosphere is being polluted by different harmful compounds, and in Aktyubinsk the accumulation of sludge is continuing. The Ministry of the Chemical Industry is obliged in the near future to see to improving the status of the environment in these regions.

There is no doubt that for radical solution of the problems of environmental protection the reorganization of traditional technological processes and methods has decisive significance. It would lead to the creation of low-waste or practically waste-free production facilities with high technico-economic indicators and would contribute to the solution of the problem of the most complete and efficient utilization of natural resources. Therefore it is very important to insure fulfillment of the assignments established by the plans regarding the development of such processes. Meanwhile there is a number of disappointing failures during the fulfillment of these quotas.

Thus, for instance, in 1978 it was proposed to manufacture, install and put into operation experimental-industrial installations for purification of waste waters at enterprises of the Navoiazot Production Association of the Ministry of the Chemical Industry, making it possible practically to solve the problem of creating closed-drainage systems of water supply in the Bukharo-Navoiyskiy industrial region. Despite the readiness of the planning documents, the Ministry of the Chemical Industry did not provide the material and financial resources for construction of these units.

Unfortunately, it is possible to cite many more such examples.

The ministries should improve control over the implementation of nature conservation measures, over the fulfillment of established plans of creation and introduction into production of equipment and processes for purification of waste waters, gas discharges, and processing of wastes, and they should accelerate the establishment of norms of the maximum permissible discharges of pollutants into the atmosphere and the water, and give greater attention to questions of more complete extraction of useful minerals from the earth and valuable components during the processing of mineral raw material.

The natural environment is the most important condition of man's life, one of the essential elements of national well-being, and preservation and multiplication of its riches is a national task.

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CSO: 5000

BRIEFS

POLLUTION-CONTROL EQUIPMENT--Mobile units in charge of monitoring the extent of air pollution will go into operation in several cities of the FRG. Some of them are intended to operate on roads and highways, and others in industrial centers. The object is to determine the quality of the air which the inhabitants of populated areas and motorists are forced to breathe. The vehicles contain sensitive instruments that automatically measure and analyze the most diverse noxious substances. They also have a long-range measuring system by means of which the emissions of faulty automobiles and defective factories can be detected on a screen. [Text] [Buenos Aires LA PRENSA in Spanish 24 Jul 79 p 1 Sec 2] 8414

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MAYOR CRITICISES BUS PURCHASE

Athens BUSINESS & FINANCE in English 11 Aug 79 p 5

[Text]

FOLLOWING the announcement by the Minister of Transport that it had decided to ease the transport problem in Athens through the purchase of 800 new buses, Athens Mayor Mr. Beys launched a strong criticism of the move.

In an official statement he noted that the Greek capital was one of the most polluted cities in the world and the efforts of all central and local government services should be aimed at eliminating environmental pollution. "Contrary to this", he continued, "the Ministry of Transport is threatening the city with the invasion of 800 new buses which for decades will fill the capital with fumes which will poison its inhabitants".

Mr. Beys suggested that the proper solution to the transportation problem lay in the more extensive use of trolleys, and he pointed out that the government itself agreed with this solution. Instead of diesel and gasoline, the trolleys would consume only electricity, the Mayor pointed out, and also recommended that buses should also use liquid gas which does not pollute the atmosphere.

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GEMLIK BAY SAID THREATENED BY POLLUTION

Istanbul MILLIYET in Turkish 19 Aug 79 p 2

[Article by Docent Dr. Curayten Ozyurt, Bursa University Faculty of Medicine]

[Text] Whether winter or summer, if your path should take you from Bursa to Gemlik, after passing Engurucuk you could be surprised, as poet Orhan Veli said, at the beauty of Gemlik, which suddenly appears from behind the mountains with its white houses and peerless blue sea.

As you gaze at the district, however, built at the foot of mountains covered with olive groves, the foul odor which fills the interior of your car will suffice to warn you. This odor is the odor of the waste gases irresponsibly poured out into the environment by a factory chimney for the past forty years.

Gemlik, known to have first been established around 1390 B.C., became a naval repair center during the period of the Ottoman Empire. The district, determined to have a population of 40,000 in the 1975 census, increases almost threefold during the summer months as those coming to beach resorts swell the population. The residents of the area earn their livelihood from raising olives, fishing, and fruit and vegetable cultivation, or else in the industrial enterprises in Gemlik and the area of the bay.

The waters of the bay on whose shores the community is established are quite placid, and the motion in the water occurs only in the upper layers due to the effects of the winds. The winds blow primarily from the east, while the water currents begin in the west of the bay. All the forces of nature produce ideal conditions for the sport of sailing.

Industrialization is Good, But...

The first industrialization activities in Gemlik began with the opening of the Sumerbank Artificial Silk Factory in 1939. Industrialization has accelerated during the last ten years with the establishment on the same shores of a nitrogen factory, a petroleum products storage depot, a pipe production factory,

a soap factory, a factory producing chemicals, a canned goods factory, and numerous olive depots and oil mills.

It is an indisputable fact that both the industrial enterprises and domestic tourism have brought economic and social vitality to Gemlik, the port district of Bursa. However: what has been lost from the standpoint of Gemlik's natural environment and human health in conjunction with the progress brought about by industrialization?

When the matter is dealt with in these terms, it is seen that the Artificial Silk Factory built on the shore and the various enterprises in the valley have polluted the air with their waste gases, easily perceived from the village of Umurbey. In addition to the air pollution, the enterprises on the seashore pour their wastes into the sea, while the inland factories dump their liquid wastes into the creek which empties into the sea.

It has been estimated that in the industrial enterprises, of which the larger ones work all the months of the year and the others are active in the spring and summer months, the sum total of water used in every stage of the industrial processes is equal in volume to the water consumed by approximately 477,000 people.

Waste Zinc

One of the studies which warned of water pollution in Gemlik Bay was carried out in 1976. The researchers, in water analyses performed on water samples taken from various points in the bay at depths of from zero to 45 meters, measured the concentrations of various metal ions, water and salt densities, and the quantities of dissolved oxygen.

In the studies of the metal ions, the high (57 micrograms per liter) concentrations of zinc attracted attention; when the Sumerbank Factory's acid channel was studied, it was determined that an average of 2284 mg of zinc per liter was expelled here. Thus a relation was found between the zinc in the bay, which showed a high concentration, and the high value in the factory's acid channel.

Furthermore, it was determined that the density and saltiness of the water rapidly increased at a depth of 15 meters and reached its highest level at 25 meters, the high level continuing to 40 meters.

Again in the same study, it was shown that, in parallel with the density and saltiness of the water, the amount of dissolved oxygen began to decrease at 15 meters, decreasing to 4 mg per liter at a depth of 40 meters.[1]

Another study showing that the water of Gemlik Bay has been polluted by industrial wastes was realized in the investigation of the mussels in the bay. The researchers found 0.34 mg of mercury per kilo in the mussels.[2]

Red Tide

The "Red Tide" observed in February 1979 in the Sea of Marmara showed itself in Gemlik Bay as well toward the end of June, and the occurrence of phosphorescence resembling a "marbling" effect in the middle of the bay became thicker, forming wide ribbons which changed the color of the rocks along the shores. The unprecedented proliferation of the micro-organism Noctiluca miliaris in this way is ascribed to the runoff of artificial fertilizers into the sea and the dumping of residential and industrial wastes into the sea. In addition, it is definitely being born in mind that these micro-organisms will use and thereby decrease the oxygen dissolved in the water, and that, by reducing the pH of the water, they will affect the natural equilibrium of the sea.

No Swimming!

Another factor which pollutes the bay's waters in addition to the industrial wastes is residential and municipal sewage. In the sections of the bay where the increased population during the summer months is found, eight residential districts were determined in Bursa Public Health Laboratory reports dated 19 June 1979 and 27 June 1979 where "the sea was not to be entered", in spite of this being the beginning of the beach season.

The Scenario

In conclusion, the waters of Gemlik Bay are definitely faced with industrial and residential pollution. It is also extremely probable that agricultural pollution (that is, the runoff with rainwater of the chemicals on artificially fertilized fields into streams and thence into the sea) is also involved.

The water pollution exhibits a geometrical increase. As the decrease in dissolved oxygen and the waste product levels determined at greater depths increase, these conditions progress toward the surface layers. The phenomenon of the red tide is a vivid example of this. It is obvious that this change in the chemical makeup of the sea water will also affect the living organisms in the waters. The distortion of the natural equilibrium could reach dimensions which could threaten those area residents who earn their livelihood by fishing.

Before Too Much Time Passes...

In addition to the water pollution, the matter of air pollution should also be taken up and studied by the relevant agencies, and its effect upon the population of the area should be determined.

It is seen as necessary that a "Clean Air Law" such as those in effect in England, the USA, and Western nations be passed for Turkey as well, and that it be administered in conjunction with a "Maritime Products Regulation" which would be effective in the control of water pollution.

If the laws and organizations required by the laws are not put into action before it is too late, and if judicial institutions do not perform their duties, then, within a short time, towns characterized by water sports and fishing will one by one come into the same condition as Istanbul's Golden Horn.

1. K. Curu and S. Yongacoglu: "Gemlik Korfezi'nin Kirlenmesi" [Pollution of Gemlik Bay] BURSA 77 SEMINERI, 19 - 22 September 1977, Bursa

2. J. Carden and H. Ozbal: BOGAZICI UNIVERSITESI ARASTIRMA MERKEZI YAYINLARI [Bosporous University Research Center Publications] No. 902, 1976, Istanbul

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